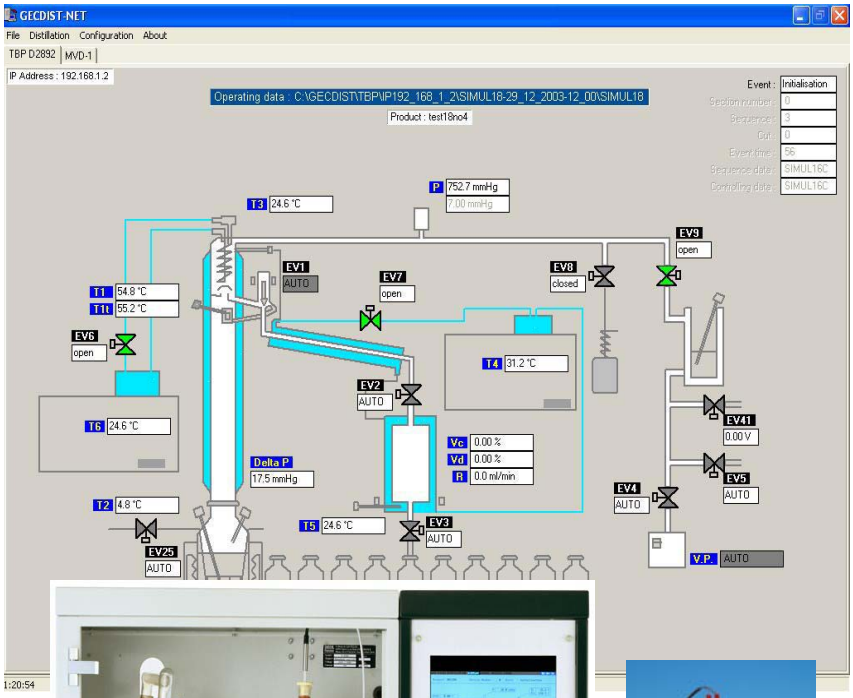
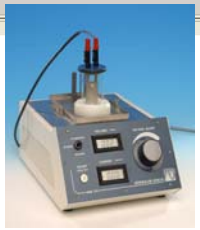
GECIL PROCESS
PROCESS AND LAB INSTRUMENTATION

GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

Petroleum and Petrochemical testers





More than 150 ASTM, ISO, DIN , CEN, IP methods covered from Manual to Fully automatic operation. Analysis development and support.

Edition 2013

The unique source of Petroleum testing instrumentation for more than 40 years

GECIL Process established in 1967 in Lyon by a team of scientists and engineers to manufacture and develop electronic control boards under the name of limited partnership "Gecil" (Groupe d'Etude et de Circuits Imprimes de Lyon Sarl) manufactured and developed several automation projects for several major industries such as SNCF Railways , Metro , Banks networking , Pharmaceutical Plants , Petroleum refineries , Chemical plants , Etc..
In the 70's Gecil starts its collaboration with the petroleum industry and more specifically with TOTAL to introduce the first fully automatic distillation TBP D2892 2L . This has been the starting point of a full line of distillation units in accordance with the ASTM methods D86-D1160-D2892-D5236 from 125ml to 200 Liters .

In 1981 Gecil became GECIL Process SA and starts the distribution and service center for North and South America GT instruments in 1984. GT instruments introduced on the US Market the product line of GECIL process but also the instruments from several European manufacturers such as ISL France ,HAAGE Germany, Analis Belgium .

In the 90's GECIL Process participated to Normalab Sarl the manufacturing and development center of automatic instruments for Normandie Labo SA. Since this period GT instruments is distributing and servicing the petroleum products line Normalab.
In 1995 GECIL Process has been appointed by IFP The French Petroleum Institute as a licensor of Carburane DHA GC analysis software and applications . This has been the starting point of the development of several Gas Chromatography applications and software's in collaboration with IFP or others petroleum companies to deliver technical solutions or Turnkey systems in the GC's analytical labs or On line.

Also during the same period GECIL Process entered in the capital of GR Scientific UK to complete the introduction of a new line of Karl Fischer Coulometric Titrators for laboratory use and field portable testing unit .

In this Petroleum and Petrochemical Testers Catalog 2013 , you will find a selection of ASTM testers by method number .This list is non exhaustive and additional instruments are available .

Several catalogs are available ,contact our Customer Sales Department :

- **Crude Oil Evaluation distillation Catalog .**
- **Custom Analytical Solutions GC catalog**
- **KF Titrators , TAN TBN Titrators catalog**
- **Catalyst Mechanical physical testers**
- **ASTM automatic and Semi automatic analyzers**
- **All individual brochures on request**

Our continuous feedback from our users and participation to several standardization organizations such as ASTM keep us on top of the latest modifications and improvements for the instruments made by our company.

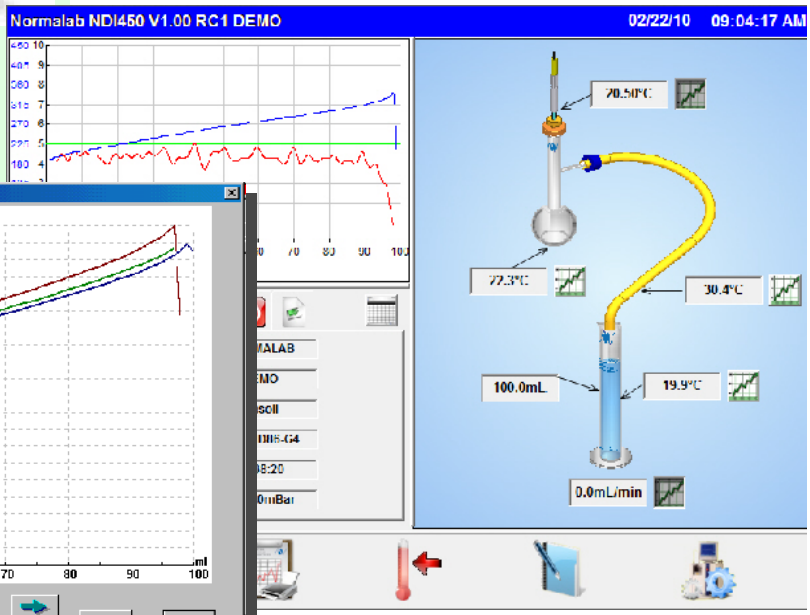
AUTOMATED ATMOSPHERIC DISTILLATION OF PETROLEUM PRODUCTS - NDI 450

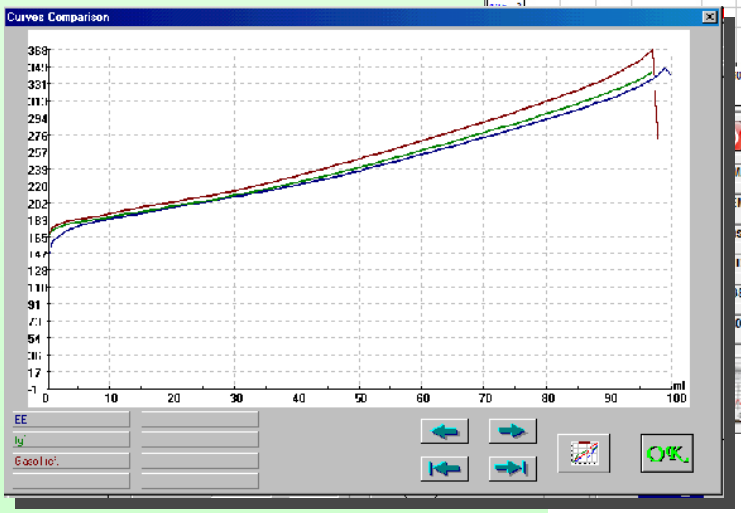
Performs Distillations in accordance with: ASTM D86, D189, D850, and D1078

PC Supervisor controls up to 16 distillation units

All Glass Receiver

- **Stand Alone configuration &**
- **XP Pro / W7 Supervisor linked**





Multiple distillation curves display to compare several samples

Synoptic screen allows real time viewing of all distillation parameters

- **Unlimited Product and Data Files Storage**
- **Multiple Calibration of Probes and Receivers**
- **LIMS Ready and fully W CE system**
- **All Steel Casing for Sturdiness and Safety**
- **A Peltier heating and cooling system no more AC system**

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14 Rte ST Romain -69450 ST Cyr au Mont d'or FRANCE
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Email : Info@gecil.com
http://www.gecil.com

AUTOMATIC DISTILLATION OF PETROLEUM PRODUCTS

NDI 450 - Available Features and Specifications

Instrument Description:

- With this fifth generation, the NDI 450 has been developed using the latest evolutions and technology available for atmospheric distillation. This allows for higher accuracy for increased repeatability and a user friendliness never attained until now.
- The NDI 450 **complies with all 5 groups of sample types defined in the ASTM methods**. It can operate as a stand alone unit with its own keyboard and 14" color display in Windows CE environment . It can also be linked together to an external Pentium PC W7 or XP Pro . Up to 16 distillation units can be connected to a single PC Supervisor. Each unit is independent and may be disconnected or stopped without disrupting other units.
- The NDI 450 standard configuration includes a fast cooling system with Peltier system no more AC compressor , a thermostated condenser and receiver compartment, an optional automatic fire extinguishing detection system with Nitrogen injection in-built, temperature range is 0 to 450°C, measure of ambient temperature and pressure, auto-diagnostic function, Color touch screen 10 " display and touch pad, and 3 USB Ports—1 RS232 serial port and 1 Ethernet RJ45 port , VGA port to connect external monitor, Connectors for calibration of temperature and pressure analog inputs.
- The NDI 450 is delivered with the following standard accessories:

Flasks and CERAN plates for all methods mentioned above including drypoint, 100ml all glass receiver, a 5ml graduated cylinder to quantify residue, PT 100 probe, Automatic dry point kit, an operating and service manual.

Available Features & Specifications

- Heating system: 1000W conforms to ASTM
- Condenser bath: 0 - 60°C
- Receiver compartment: 0 - 40°C
- Flask temperature range: 0 - 450°C
- Resolution flask Temperature: 0.05°C
- Resolution level follower: 0.02ml
- Resolution atmospheric pressure: 0.07 bars
- Distillation rate: 0 - 10ml/mn
- Calibration level follower: 5 & 100 ml
- Ambient temperature: Yes
- Cooling system: Sealed, Peltier system
- Cooling at end of test: By ventilation
- Condenser start-up time: Immediate
- Fire extinguisher: Both optical and Nitrogen injection
- Display: 10" color screen
- Keyboard: touch screen pad
- 3 USB ports
- Ethernet Port
- Dimensions: 69 x54x50 cm 27 x 21 x 20 inches
- Weight:80 Kgs 176 Lbs
- Power requirement: 230V/3KW 50/60Hz

- Number of programs: greater than 1000
- Data Storage: greater than 500000 tests
- Create/ Modify/ Delete files and data: Yes
- Safety management: Yes
- Detection of heating range by algorithm: Yes
- Optimization of heating rates: Yes
- Synoptic screen: To follow test in progress
- Numerical & Graphical display of data during test
- Repeatability and reproducibility calculation: Yes
- Data transfer to a LIMS: Yes
- Maintenance and diagnostic functions: Yes
- Automatic calibration: Yes
- Historical data of calibration and alarms: Yes
- Data entry of correction table: Yes
- Dry point detection: Automatic
- Receiver auto-detect: Yes
- Door closure auto-detect: Yes
- Heating rates: 3 programmable
- Local mode and PC supervisor: Yes – W7 – XP pro
- Numerical & Graphical comparison of data: Yes
- Cetane index: Yes

For additional information please contact:

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Ordering information:

M8600-450-A110V: Complete automatic distillation D86 unit without Fire extinguisher

M8600-450-B110V: Complete automatic distillation D86 unit with Fire extinguisher

AUTOMATIC VACUUM DISTILLATION OF PETROLEUM PRODUCTS – MINIDIST 1160 Version 6.0

Truly embedded PC Pentium Control unit with color display

Hot air thermostated receiver chamber

Real alphanumeric industrial keyboard

Manual switches

Large glass trap and light ends recovery recipient.

Method ASTM D1160

Our new MINIDIST 1160 version V6.0 is the result of more than 25 years manufacturing fully automatic vacuum D1160 distillation apparatus . GECIL process has been the first company to design a PC control D1160 in the 80's . The new version includes a truly embedded industrial PC inside the process cabinet .

The operator can control the unit in local mode with all necessary functions ; programming , storage of results , synoptic color display , curves display , diagnostic mode , data transfer and more .

This unit has been design to reduce the foot print of such instrument on the bench with no need of a supervisor PC next to it . Great care has been taken for easy maintenance access for all elements of the unit.

Of course the new version V6.0 benefits of all our improvements since 20 years allowing to run heavy and light oil, residues , difficult samples , atmospheric runs , custom design program parameters accessible at any moment . All the above without compromising on the safety issue of such distillation method.

- **Stand Alone MINIDIST 1160 Version 6.0**
- **Truly embedded PC Pentium built in .**
- **Windows supervisor software W7 / XP Pro controls several distillation units**
- **Product and Data Files Storage**
- **Synoptic and curves display in real time**
- **Diagnostic maintenance display**
- **Automatic cleaning and results print or transfer .**
- **Compact and easy to use**

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AUTOMATIC VACUUM DISTILLATION BASIC – GECDIST 1160 Version 6.0

ASTM D1160 method for Asphalts , Biofuels , Oils , lubricants , HVGO , LVGO etc ..

- **Stand Alone GECDIST 1160 Version 6.0**
- **Truly embedded PC Pentium built in .**

Of course the new version V6.0 benefits of all our improvements since 25 years allowing to run heavy and light oil, residues , difficult samples , atmospheric runs , custom design program parameters accessible at any moment . All the above without compromising on the safety issue of such distillation method.

Our new GECDIST 1160 version V6.0 is a respond to the increase demand of small laboratories with low through-put of samples and looking at an affordable automatic distillation unit .With our experience of more than 25 years manufacturing fully automatic vacuum D1160 distillation apparatus we introduce GECDIST 1160 V6 unit.

This configuration has all capabilities of our more flexible unit MINIDIST 1160 V6 but without the capability to communicate with an external PC W7 supervisor .

In addition the unit can be delivered without vacuum pump , heating circulating bath , heating mantle and flask as generally these components are already used in most laboratories . Making GECDIST 1160 V6 the best affordable automatic unit on the market .

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CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

FULLY AUTOMATIC DISTILLATION MINIDIST PLUS type RTBP Version V6

Automatic 2L D2892 distillation unit MINIDIST PLUS type RTBP 02L with option D5236 500ml

Models from 2L or 3L flasks

Automatic debutanisation step

Automatic control from IBP to FBP.

Automatic fractions collector 8 receivers

Automatic cleaning program.

Run in °C or °F , in mmHg or mBar.

Extensive library of distillation programs.

Data storage of distillation runs

Built in Ethernet interface for remote control by supervisor PC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

As per ASTM D2892 and D5236

■ The MINIDIST PLUS type RTBP unit includes all ASTM D2892 glassware, Head and flask probes, electronic pressure sensor 100 mmHg,level follower system to control volume and distillation rate, automatic fraction collector for 8 positions , automatic embedded PC104 with vacuum control , vacuum pump , condenser cooling bath, Ethernet link to a PC Windows XP Pro Supervisor GECDIST Net.

■ A comprehensive user friendly software allows the operator to access several graphic screens with synoptic display , curves display , distillation and calibration parameters files , maintenance and diagnostic screens.

■ Select a distillation program from the library and press the key START. The MINIDIST PLUS program will automatically control the initial heating, debutanisation, equilibrium time , IBP detection , distillation control up to the final boiling point with automatic preparation of the fractions in temperature AET or Volume . The only operator intervention is when changing pressure set point , he has to recover the fractions from the previous step. The program will memorized all analog and digital data every 0.1% volume and every 60s .

■ Automatic print out of final report with customer configuration . Conversion of results in format Excel .

■ Several options are available such as differential pressure drop control , heating column jacket, Cryoplunger for vacuum trap , cooling circulating bath for distillate lines, electronic balance .

■ Optional D5236 setting with 500 ml flask to prepare fractions up to 575 C AET

For information please contact:

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FULLY AUTOMATIC DISTILLATION
MINIDIST PLUS type E Version V6

Automatic D2892 distillation unit MINIDIST PLUS type E

Models from 2L up to 22L flasks

Automatic debutanisation step

Automatic control from IBP to FBP.

Automatic fractions collector

Automatic cleaning program.

Run in °C or °F , in mmHg or mBar.

Extensive library of distillation programs.

Data storage of distillation runs

Built in Ethernet interface for remote control by supervisor PC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

As per ASTM D2892

■ The MINIDIST PLUS type E unit includes all ASTM D2892 glassware, Head and flask probes, electronic pressure sensor 10 and 1000 mmHg,level follower system to control volume and distillation rate, automatic fraction collector for 12 positions , automatic embedded PC104 with vacuum control , vacuum pump , condenser cooling bath, Ethernet link to a PC Windows XP Pro Supervisor GECDIST Net.

■ A comprehensive user friendly software allows the operator to access several graphic screens with synoptic display , curves display , distillation and calibration parameters files , maintenance and diagnostic screens.

■ Select a distillation program from the library and press the key START. The MINIDIST PLUS program will automatically control the initial heating, debutanisation, equilibrium time , IBP detection , distillation control up to the final boiling point with automatic preparation of the fractions in temperature AET or Volume . The only operator intervention is when changing pressure set point , he has to recover the fractions from the previous step. The program will memorized all analog and digital data every 0.1% volume and every 60s .

■ Automatic print out of final report with customer configuration . Conversion of results in format Excel .

■ Several options are available such as differential pressure drop control , heating column jacket, Cryoplunger for vacuum trap , cooling circulating bath for distillate lines, electronic balance .

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FULLY AUTOMATIC DISTILLATION MINIDIST PLUS type MVD version V6

Automatic D2892 distillation unit MINIDIST PLUS type MVD

Models from 2L up to 200L flasks

Absolutely no operator intervention from start to FBP 375/420 °C AET

Automatic debutanisation step

Automatic control from IBP to FBP.

Automatic fractions collector

Automatic cleaning program.

Extensive library of distillation programs.

Data storage of distillation runs

Built in Ethernet interface for remote control by supervisor PC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

As per ASTM D2892

■ The MINIDIST PLUS type MVD unit includes all ASTM D2892 glassware, Heating column jacket , Head and flask probes, electronic pressure sensor 10 and 1000 mmHg,level follower system to control volume and distillation rate, automatic pressure drop control, automatic fraction carrousel for 36 positions , automatic weighing , automatic capping of the collecting receivers, automatic embedded PC104 with vacuum control , vacuum pump , condenser and distillate lines cooling baths, Cryoplunger for traps , Ethernet link to a PC Windows XP Pro Supervisor GECDIST Net.

■A comprehensive user friendly software allows the operator to access several graphic screens with synoptic display , curves display , distillation and calibration parameters files , maintenance and diagnostic screens.

■ Select a distillation program from the library and press the key START. The MINIDIST PLUS program will automatically control the initial heating, debutanisation, equilibrium time , IBP detection , distillation control up to the final boiling point with automatic preparation of the fractions in temperature AET or Volume . The only operator intervention is to load the crude and recover the fractions after vacuum step at 350 to 420C AET . The program will memorized all analog and digital data every 0.1% volume and every 60s .

■ Automatic print out of final report with customer configuration . Conversion of results in format Excel .

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FULLY AUTOMATIC DISTILLATION
MINIDIST PLUS type F version V6

Automatic D2892 distillation unit MINIDIST PLUS type F

Models from 36L up to 100L flasks

Automatic debutanisation step

Automatic control from IBP to FBP.

Automatic fractions collector

Automatic cleaning program.

Run in °C or °F , in mmHg or mBar.

Extensive library of distillation programs.

Data storage of distillation runs

Built in Ethernet interface for remote control by supervisor PC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

As per ASTM D2892

■ The MINIDIST PLUS type F unit includes all ASTM D2892 glassware, Head and flask probes, electronic pressure sensor 10 and 1000 mmHg,level follower system to control volume and distillation rate, automatic fraction collector for 12 positions , automatic embedded PC104 with vacuum control , vacuum pump , condenser cooling bath, Ethernet link to a PC Windows XP Pro Supervisor GECDIST Net.

■A comprehensive user friendly software allows the operator to access several graphic screens with synoptic display , curves display , distillation and calibration parameters files , maintenance and diagnostic screens.

■ Select a distillation program from the library and press the key START. The MINIDIST PLUS program will automatically control the initial heating, debutanisation, equilibrium time , IBP detection , distillation control up to the final boiling point with automatic preparation of the fractions in temperature AET or Volume . The only operator intervention is when changing pressure set point , he has to recover the fractions from the previous step. The program will memorized all analog and digital data every 0.1% volume and every 60s .

■ Automatic print out of final report with customer configuration . Conversion of results in format Excel .

■ Several options are available such as differential pressure drop control , heating column jacket, Cryoplunger for vacuum trap , cooling circulating bath for distillate lines, electronic balance .

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FULLY AUTOMATIC POTSTILL DISTILLATION MINIDIST PLUS type A Version V6

Automatic D5236 distillation unit MINIDIST PLUS type A

Models from 2L up to 22L flasks

Automatic first drop detection

Automatic control from IBP to FBP.

Automatic fractions collector

Automatic cleaning program.

Run in °C or °F , in mmHg or mBar.

Extensive library of distillation programs.

Data storage of distillation runs

Built in Ethernet interface for remote control by supervisor PC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

As per ASTM D5236

■ The MINIDIST PLUS type A unit includes all ASTM D5236 glassware, Head and flask probes, electronic pressure sensor 10 and 1000 mmHg,level follower system to control volume and distillation rate, automatic fraction collector for 12 positions , automatic embedded PC104 with vacuum control , vacuum pump , condenser cooling bath, Ethernet link to a PC Windows XP Pro Supervisor GECDIST Net.

■A comprehensive user friendly software allows the operator to access several graphic screens with synoptic display , curves display , distillation and calibration parameters files , maintenance and diagnostic screens.

■ Select a distillation program from the library and press the key START. The MINIDIST PLUS program will automatically control the initial heating, IBP detection, first drop detection , distillation control up to the final boiling point with automatic preparation of the fractions in temperature AET or Volume . The only operator intervention is when changing pressure set point , he has to recover the fractions from the previous step. The program will memorized all analog and digital data every 0.1% volume and every 60s .

■ Automatic print out of final report with customer configuration . Conversion of results in format Excel .

■ Several options are available such as heating column jacket, Cryoplunger for vacuum trap , electronic balance.

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AUTOMATIC POTSTILL DISTILLATION
GECDIST type A Version V6

Automatic D5236 distillation unit GECDIST type A V6

From 2L up to 10L Glass flasks

Automatic first drop detection

Automatic control from IBP to FBP.

Automatic fractions collector

Automatic cleaning program.

Run in °C or °F , in mmHg or mBar.

Extensive library of distillation programs up to 50 .

Data storage of distillation runs up to 50

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

As per ASTM D5236

External PC104 Controller
GECDIST type A V6

■ GECDIST type A unit includes all ASTM D5236 glassware, Head and flask probes, electronic pressure sensor 100 mmHg,level follower system to control volume and distillation rate, automatic fraction collector for 12 positions , external embedded PC104 with vacuum control , vacuum pump , condenser cooling bath,

A comprehensive user friendly software allows the operator to access several graphic screens with synoptic display , curves display , distillation and calibration parameters files , maintenance and diagnostic screens.

■ Select a distillation program from the library and press the key START. The GECDIST V6 program will automatically control the initial heating, IBP detection, first drop detection , distillation control up to the final boiling point with automatic preparation of the fractions in temperature AET or Volume . The only operator intervention is when changing pressure set point , he has to recover the fractions from the previous step. The program will memorized all analog and digital data.

■ Automatic print out of final report with customer configuration .

■Several options are available such as heating column jacket, Cryoplunger for vacuum trap

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AUTOMATIC TBP DISTILLATION
GECDIST type E Version V6

Automatic D5236 distillation unit GECDIST type E V6

From 2L up to 10L Glass flasks

Automatic debutanisation step

Automatic control from IBP to FBP.

Automatic fractions collector

Automatic cleaning program.

Run in °C or °F , in mmHg or mBar.

Extensive library of distillation programs up to 50 .

Data storage of distillation runs up to 50

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

As per ASTM D2892

External PC104 Controller
GECDIST type E V6

■ GECDIST type E unit includes all ASTM D2892 glassware, Head and flask probes, electronic pressure sensor 100 mmHg,level follower system to control volume and distillation rate, automatic fraction collector for 12 positions , external embedded PC104 with vacuum control , vacuum pump , condenser cooling bath,

A comprehensive user friendly software allows the operator to access several graphic screens with synoptic display , curves display , distillation and calibration parameters files , maintenance and diagnostic screens.

■ Select a distillation program from the library and press the key START. The GECDIST V6 program will automatically control the initial heating, IBP detection, first drop detection , distillation control up to the final boiling point with automatic preparation of the fractions in temperature AET or Volume . The only operator intervention is when changing pressure set point , he has to recover the fractions from the previous step. The program will memorized all analog and digital data.

■ Automatic print out of final report with customer configuration .

■Several options are available such as heating column jacket, Cryoplunger for vacuum trap

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AUTOMATIC CRUDE OIL DEHYDRATION UNIT – DH87

DH87 Mono reactor unit

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

Performs continuous automatic dehydration of crude oil samples.

Dehydrate to less than 0.1% content , petroleum crude oil with up to 42 %

Continuous automated operation

Protect your TBP D2892 glassware investment

We are also offering a model DH87 TWIN for higher capacity .

ASTM D2892 , D5236 methods crude samples to be dehydrated

- The DH87 unit is specially designed for crude evaluation laboratories to remove water from raw crude prior to performing D2892 distillation with quantification of water content and safe operation without any operator intervention .
- Upon the type of crude and water content the DH87 allows to run between 600ml to 1500ml per Hour. Or even twice this capacity with the DH87-TWIN model
- After setting the parameters , load the sample to be dehydrated into the sample vessel, record the weight and start the dosing pump. During the process run , more sample can be introduced for dehydration .
- At the completion of the run record the weight of all fractions recovered for weight balance report .
- The light ends will be trap in a debutanisation traps . An optional cryoplunger can be delivered to avoid using dry ice in such traps.

ORDERING INFORMATION:

Cat # 3DH87

Automatic Dehydration unit complete with baths

OPTION

Cryoplunger –90C FT900

For information please contact:

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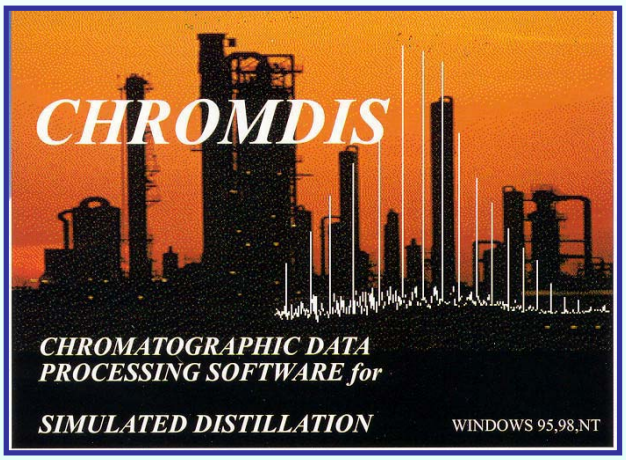
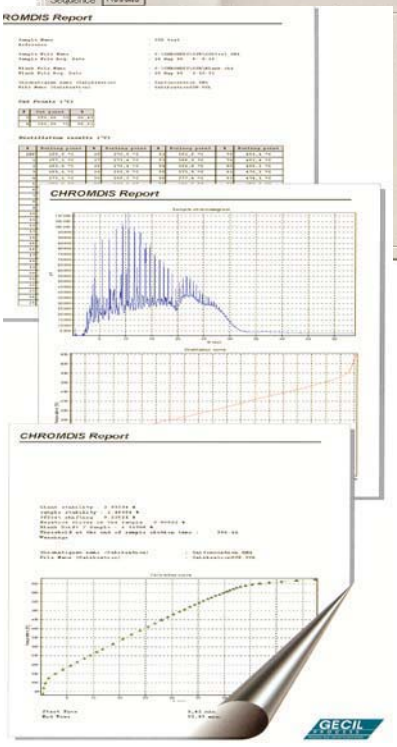
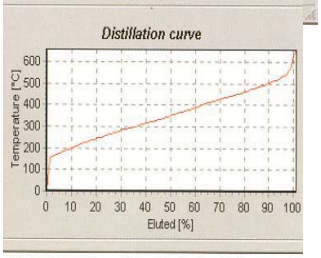
GC SIMULATED DISTILLATION SOFTWARE



As per ASTM D2887,D3710,D5307, D6352 and all Simdist methods





CHOICE TO USE :

- Any ASTM Simdist methods or your own
- Suitable for Simdist method development
- Standard IFP methods :
- CSD from 35 to 650°C
- HTSD from 174 to 720°C

INTUITIVE and EASY TO USE

- Quantitative Mode with internal or external standards or without standard.
- Two modes of processing data: Post Run Mode or Reprocessing Mode .
- On screen viewing of results , calibration graphs, and Simulated distillation graphs.
- GLP compliance

Full catalog and Demo CD available upon request we can install Chromdis on your current GC hardware or we will offer a complete turnkey GC system with the methods of your choice . Chromdis the only universal GC software for Simulated Distillation

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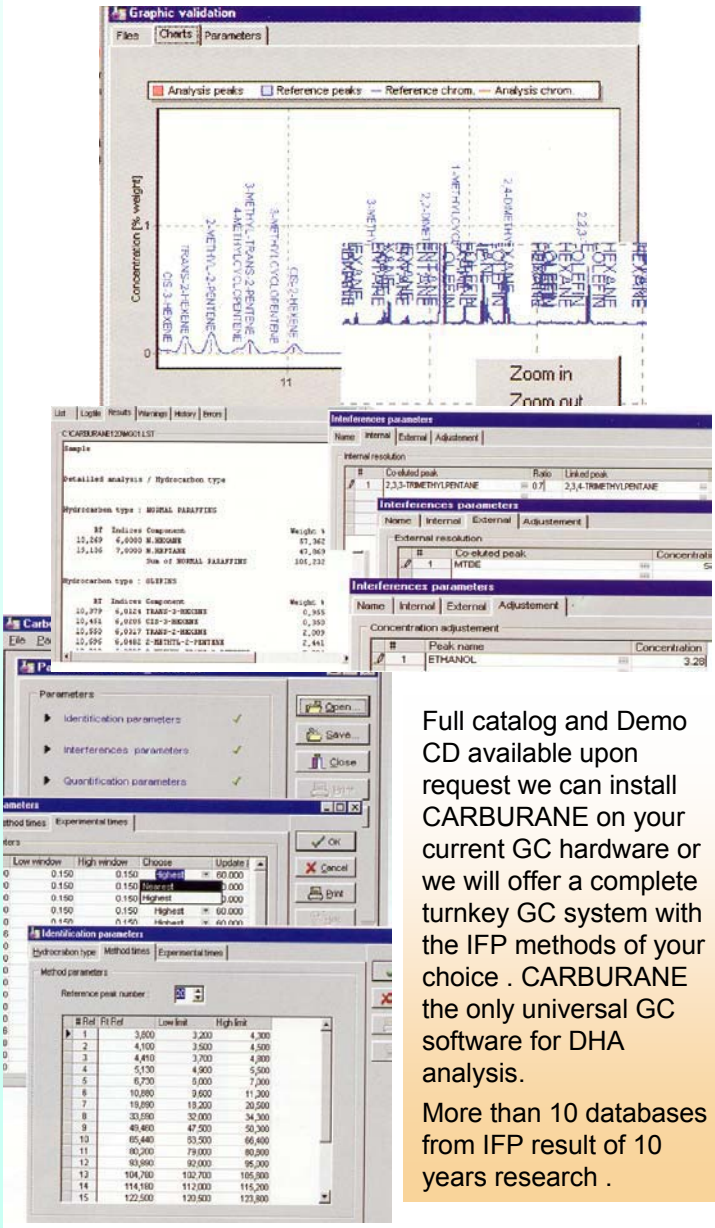
GECIL PROCESS
PROCESS AND LAB INSTRUMENTATION

GC DETAILED HYDROCARBON ANALYSIS SOFTWARE

Carburane

CHROMATOGRAPHIC DATA PROCESSING SOFTWARE for HYDROCARBON CHARACTERIZATION

As per ASTM D6730 , 6733



- ***Detailed Hydrocarbon Analysis.***
- ***Analysis by hydrocarbon groups (PONA, PIONA,…) by carbon number.***
- ***Quantification:Weigh,Volume ,Mole%.***
- ***Simulation of fractions.***
- ***Simulated distillation report.***
- ***Physical Properties determination such as RON,MON , RVP,Sg, Etc..***
- ***Determination of carbon,hydrogen, oxygen,sulfur and nitrogen content.***
- ***Graphic validation and comparaison of chromatograms.***
- ***Simulation of blending of several gasoline effluents .***

- ***Carburane can be used on any GC hardware and integration PC workstation .***
- ***Only one GC to analyze all gasoline refinery bases such as Naphta, Straight run , Reformates,, FCC, Isomerisation , finished motor gasoline and more ….***

Full catalog and Demo CD available upon request we can install CARBURANE on your current GC hardware or we will offer a complete turnkey GC system with the IFP methods of your choice . CARBURANE the only universal GC software for DHA analysis.

More than 10 databases from IFP result of 10 years research .

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GECIL PROCESS
PROCESS AND LAB INSTRUMENTATION

GEC- TAN Total Acid Number Titrator

ASTM D664 with Micro method capability

Background

The GEC - TAN total acid number titrator has been designed to offer maximum specifications and features whilst being priced at a very competitive level. This titrator conforms to ASTM D664 for determination of acidic constituents in petroleum products, lubricants and transformer insulating oils.

Optional kit for Micro sample method allowing to reduce the amount of reagents used and keeping the accuracy of the ASTM method

- User-frendly instrument.
- Easy to use. Provides precise results even for non specialized users.
- Specific titration programs depending on the expected TAN of the sample.
- Results in mg KOH/g.
- Data Logger for the last 50 titration results.
- Transmission of results to printer or PC.
- High precision 10ml syringe.
- Resolution 1/40,000 of syringe volume.
- 5 year warranty.

For information please contact:

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GEC-TAN Total Acid Number automatic Titrator

Specifications & Features

Non-volatile memory	3 titration programs depending on TAN content, Blank titration, Clock/calendar. Header texts:2 lines x 40 characters. Name of up to 4 operators Up to 50 results stored in Data Logger
Languages	English, Spanish, French, Italian
Display	Graphic backlit LCD, 128 x 64 dots
Keypad	Membrane, 7 keys, guaranteed up to 6 million strokes per key Material: PET with protective treatment
Syringe volume	Standard syringe 10 ml
Resolution	1/40000 of syringe volume
Dispensing accuracy	(as relative error) ≤ 0.2 % for volumes higher than 10 % of syringe
Dispensing reproducibility	± 0.1 % for volumes higher than 10 % of the syringe
Liquid contact materials	Syringe: borosilicate glass and PTFE Electrovalve: PTFE and KEL-F. Tubes: PTFE
Inputs and outputs	Differential measurement: 2 BNC connectors. For external keyboard, miniDIN connector. RS232C bidirectional for PC or printer, telephone connector. RS232C for balance, telephone connector Stirrer control: On/Off and speed, RCA connector
Power supply	110 – 240 V AC, 50-60 Hz
Electrical safety	Meets EC, EN 61010
EMC	Meets EC, EN 50081-2 and EN 50082-2
Permitted temperatures	Operating: 10 – 40 ºC. Storage: 10 – 50 ºC ≤ 80 %, relative humidity, non condensing
Enclosure	ABS and enamelled steel
Physical parameters	Weight: 4 kg approx. Dim : 130 x 160 x 300mm

GECIL
PROCESS
PROCESS AND LAB INSTRUMENTATION

GEC- KFV Karl Fischer volumetric Auto Titrator

ASTM D1364 D3401 D4377 D4672 E203 D5460 D5530 E180

Background

The GEC-KFV Volumetric Karl Fischer titrator has been designed to offer maximum specifications and features whilst being priced at a very competitive level. This fully programmable titrator offers several user programs for titration and standardisation.

•2 x 5ml syringes – one to be used for the KF reagent and the other for automatic dosing of a standard for the titre. The second syringe can also be used for a different factor reagent or possibly special reagents for ketone / amine samples.
• 2 x built-in peristaltic pumps – one for dispensing the solvent into the titration vessel and the other for emptying the vessel.
• Automatic air bubble elimination.
• Automatic rest cycle (standby mode) if not used for 10 minutes.
• Intelligent control of drift value.
• Results in ppm, mg/L, %, etc.
• 5 year warranty

For information please contact:

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GEC-KFV Karl Fischer Volumetric Titrator

Specifications & Features

Non-volatile memory	Up to 10 titration programs, Clock/calendar, Header texts: 2 lines x 40 characters. Name of up to 4 operators Program comments: 8 lines x 40 characters Up to 50 results stored in Data Logger
Languages	English, Spanish, French, Italian
Display	Graphic backlit LCD, 128 x 64 dots
Keypad	Membrane, 7 keys, guaranteed up to 6 million strokes per key,
Measuring ranges	From 0.1 mg up to 100% water
Syringe volume	Standard syringe 5 ml
Resolution	1/40000 of syringe volume
Dispensing accuracy	(as relative error) ≤ 0.2 % for volumes higher than 10 % of syringe
Dispensing reproducibility	± 0.1 % for volumes higher than 10 % of the syringe
Liquid contact materials	Syringe: borosilicate glass and PTFE Electrovalve: PTFE and KEL-F. Tubes: PTFE
Inputs and outputs	Polarised electrode, BNC connector. For external keyboard, miniDIN connector. RS232C bidirectional for PC or printer, telephone connector. RS232C for balance, telephone connector Stirrer control: On/Off and speed, RCA connector
Power supply	110 – 240 V AC, 50-60 Hz
Electrical safety	Meets EC, EN 61010
EMC	Meets EC, EN 50081-2 and EN 50082-2
Permitted temperatures	Operating: 10 – 40 ºC. Storage: 10 – 50 ºC ≤ 80 %, relative humidity, non condensing
Enclosure	ABS and enamelled steel
Physical parameters	Weight: 4 kg approx. Dim : 130 x 160 x 300mm

GECIL PROCESS
PROCESS AND LAB INSTRUMENTATION

GEC- Aquamax Coulometric Karl Fischer Titrator

ASTM D1533 , D4928 , D6304, IP386, API MPMS Chapter 10.9, BS 60814 , and user defined methods

Background The GEC-Aquamax has been developed in response to many suggestions and comments from our customers in laboratories, off-shore and in the field. The built-in battery and optional carry case, provide the versatility required by the laboratory and also the ease of use and portability required by the field engineer.

Easy to Use Simple to programme so that only a single button needs to be pressed for a titration, everything else is automatic.

The unique Low Drift Cell glassware design is by far the easiest to use and also the most robust. The “O” ring system allows the joints to seal completely without the use of grease or Teflon sleeves. Hassle free assembly and disassembly.

Results & Records The built-in high speed printer provides hard copy of results and even allows duplicate print outs if required. Results can also be downloaded via the Results Manager software package onto a pc spreadsheet format.

Spares & Accessories The GEC- Aquamax is supplied ready for operation. A comprehensive glassware pack including electrodes, vessel, leads, syringe, printer paper, etc, is supplied as standard. A calibration certificate and 24 month warranty are also provided.

Reagents Specially formulated to provide optimum performance with all makes and models of coulometric Karl Fischer titrators, our unique reagents provide improved sample miscibility and solubility. Cou-Lo Formula reagents are packaged in single-shot screw top bottles containing 100ml anode reagent and 5ml easy-snap ampoules of cathode reagent. Standard carton contains 8 anode charges, 8 cathode charges and 2 water standards.

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

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Cou-Lo Aquamax Karl Fischer Titrator

Specifications & Features

■ **Titration method**	**Coulometric Karl Fischer titration**
■ Electrolysis control	Patented “ACE” control system
■ End point detection	AC polarisation
■ End point indication	Visual display/print out/acoustic beep
■ Display	40 character alphanumeric backlit LCD
■ Measuring range (possible)	1µg – 100mg water
■Measuring range (typical)	1µg – 10mg water
■Moisture range	1 ppm – 100% water
■Max. sensitivity	0.1 µg
■Max. titration speed	2.0 mg per minute
■Max. current	400 ma
■Drift compensation	Automatically controlled
■Start delay time	0 – 30 minutes, user selectable
■End delay time	0 – 30 minutes, user selectable
■Power supply	90-264V AC, 47-63 Hz. 12V DC car adapter/intern.battery
■Precision	10-100µg ±3µg, 100µg-1mg ±5µg, above 1mg ±0.5%
■Calculation modes	Weight/weight, user programmable Weight/dilution ratio, user programmable , Volume/density, user programmable Volume/volume, user programmable
■Display format	µg, mg/kg, ppm, %
■Print format	µg, mg/kg, ppm, %
■Statistics	max, mean, min values upto 99 runs
■Method storage	10 user programmable methods
■Sample ID number	User programmable
■Printer	42 character high speed thermal printer
■Stirrer speed	Microprocessor controlled
■Dimensions	250 x 245 x 120 mm
■Weight	3 kg
■**Calendar/clock**	**Analysis time & date print out**
■Battery low indicator	Display & print out indication

For information please contact:

GECIL
PROCESS
PROCESS AND LAB INSTRUMENTATION

VISCO TUBES WASHER
Model VISCO WASH

Automatic Viscosity Tubes Washer

Cleans up to 6 viscometer tubes at a time such as Cannon, Fenske, Ubbelohde,Zeitfuchs,Asphalt ….

Saves operating time

Reduces solvent disposal

Reduces calibration turn over

Environmentally safe

For all type of capillary viscosity method tubes

- The VISCO WASH includes a heating rate controller for the heating reactor mantle , a timer , a glass reactor and viscometer tubes holder, and a top condenser cover. The utilities required are a power supply 110V or 220V and a tap water supply .
- The VISCO WASH will clean up 6 capillary viscometer tubes in 5 to 20 minutes even the dirtiest ones such as : polymerized products , tar , resins , asphalt, ……
- Only 1 liter of solvent non aromatic and non flammable is necessary per week .
- The very gentle cleaning process allows to reduce the calibration frequency of the viscometer tubes.
- The instrument is a closed system which drastically reduces operator exposure to the solvent .
- The VISCO WASH is easy to operate. We recommend to install such unit under a hood as a built in valve allows to drain the dirty solvent .
- With the VISCO WASH you can use any kind of solvent with boiling point from 65°C to 130°C . Our customer service department will provide the specifications of a non aromatic and non flammable solvent with high cleaning power . All parts in contact with the solvent are made of glass , PTFE or Stainless Steel .
- Hundreds of units have been used worldwide for several years , join the group and keep your operators happy .

For information please contact:

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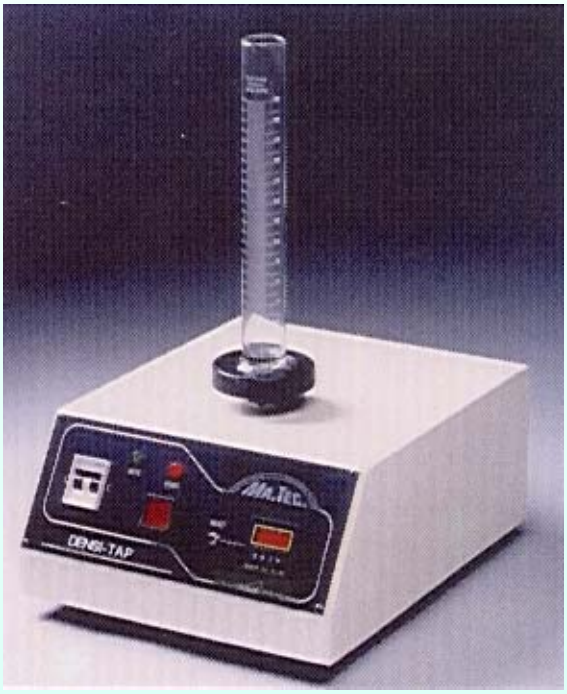
BULK DENSITY TESTER



DENSI-TAP is a bench instrument and is compliant with CE specifications. .

DENSI-TAP control panel

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

as per ASTM D4164

Description/Overview DENSI-TAP is designed to measure the bulk density of both powders and formed particles (maximum size about 5 mm).

It complies with ASTM standard D4164. The sample is poured into a graduated cylinder (usually 250 ml) hinged on a tapping device.

A four-digit taps counter is included, programmable to the required number of taps (usually 1000).

When tapping is completed, the tapped volume is read on the cylinder graduation.

USE DENSITAP TO ASSESS POWDER FLOWABILITY

The flow properties of powders are important not only in the pharmaceutical and catalyst industries, but also whenever powder movement is necessary.

Many methods have been proposed to estimate the flow properties of powders. Most conveniently, the powder flowability can be determined through the Hausner Ratio, is the ratio between the tapped and the loose-packed densities of the powder.

DENSI-TAP is the best choice for such measurements.

Technical data

Power Supply	220V 50HZ 1 A
Weight	25 kg
Size (Width x Height x Depth)	320 x 400 x 550 mm
Sample particle size	5 mm max
Reproducibility	1.5%

Compliant with ASTM standard D4164

110V/60Hz version available on request

For information please contact:

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DENSIPRESS Series
Bulk Density and Electrical resistance under pressure

DENSIPRESS and DENSIPRESSR are compliant with CE specifications

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

as per custom built methods

Description/Overview

The determination of the relationship between powder bulk density and applied pressure provides relevant information for the optimization of tableted materials like carbons, ceramics and catalysts.

DENSIPRESS is an appliance to measure the bulk density of a powder as function of the applied pressure.

DENSIPRESS/R also measures the electrical resistance. Both instruments are equipped with a cylindrical sample container (diameter 20 mm, length 250 mm), where the powder is loaded. Copper cylinders with different lengths allow to change the sample volume.

The sample container, Teflon-lined in **DENSIPRESS/R**, can be detached from the basement for easier removal of the powder.

In **DENSIPRESS/R** two wired copper disks placed at the bottom of the piston and of the sample container allow to measure the electrical resistance of the powder through an ohmmeter.

Technical data

Power Supply Battery operated

Weight 50 kgs 110 Lbs

Size (W x H x D) 200 x 820 x 250 mm 7.9 x 32.3 x 10.0 Inches

Color Blue and Black

Maximum load 150 Kgs (other range upon request)

Typical max applied pressure : 45-50 Bar 650 –750 psi

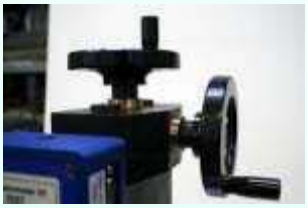
Maximum useful sample : 6 to 7 ml

RS232 PC connection : included

Rechargeable battery

110V/60Hz version available on request

DENSIPRESS Series
Bulk Density and Electrical resistance under pressure



Control Whells

Digital display and controller

Teflon cylinder and copper disk

Application note

Before testing, the bulk density of the powder shall be measured in a glass cylinder with the same diameter of the sample container, using exactly the same procedure to be used for loading it. The height of the powder in the sample container can thus be calculated from the previously measured bulk density.

Then the piston is shifted up to the upper level of the powder, readable on the graduated bar. By means of two wheels (coarse and fine) the piston is displaced down at suitable intervals and each time the piston level (graduated bar) and of the applied load (digital display) are noted. It is advisable to wait a few minutes before reading the value of the applied load to allow any compressed air to get out of the sample container.

The relation between the bulk density (from the volume occupied step by step by the powder and its weight) and the applied pressure (from the load and the section of the sample container) can be determined by this method .

For the measurement of the electrical resistance, an ohmmeter (included in the equipment) is connected to the two copper disks terminals.

We are available to discuss any problem related to the above-described measurements.

For information please contact:

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ROTAB Series ABRASION IN ROTATING DRUM

as per ASTM D4058

Description/Overview Abrasion in solid materials occurs because of the rubbing of solid pieces against each other (or any mechanical component). The rubbing typically takes place during transportation, in vessels or pneumatic, while loading and during any handling of the material. Abrasion leads to the formation of finer dust and to the consequent loss of precious material or valuable features.

Therefore, abrasion resistance is a property of the utmost importance for industrial catalysts. It also provides meaningful information for other industrial products (pharmaceutical tablets, fertilizers, sugar and ceramics).

ROTAB is a rotating cylinder abrasimeter measuring the abrasion resistance of solid materials (granules, pellets, etc.).

In the **ROTAB-AS/S** the rotation rate of the vessel can be set in the range 30-90 rpm. The constant-rotation version of the instrument (**ROTAB-AS**) features a fixed rotation rate of 60 rpm.

Both instruments were designed according to the ASTM standard method D4058, covering the particle size range 0.85-20 mm. Measurements can also be performed on larger size materials.

Features :

AISI 304 watertight rotating cylinder with bending drum for fast cleaning

Easy loading and discharge of the tested material

Rotating Speed : 60 rpm for ROTAB-AS

30 to 90 rpm adjustable for ROTAB-AS/S

Thermal magnetic safety switch

Start – Stop- Manual Switches .

Programmable revolution counter

Safety Grid cage enclosing the rotating drum.

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

Technical data

Power Supply	220V 50HZ 3A
Weight	68 kg
Size (Width x Height x Depth)	550 x 850 x 600 mm
Color	white and black
Rotation rate	30-90 rpm (ROTAB-AS/S) 60 rpm (ROTAB-AS)
Rotating drum	AISI 304
Safety cage	PMMA
Revolution counter	up to 9999
(automatic stop at preset number of revolutions)	
Reproducibility	5%

Compliant with ASTM D4058 (particle size range 0.85-20 mm)

110V/60Hz version available on request

Optionals (supplied on request)
No.20 ASTM sieve with pan and cover
Analytical balance to 0.01 g

ROTAB Series ABRASION IN ROTATING DRUM

DETAILS of ROTAB units

Rotab AS-S Rotation rate regulator

Rotab Control panel

Rotab – Safety Lock system

For information please contact:

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as per ASTM D4058

Application note

The ASTM standard method D4058 has been designed for catalysts, but can be conveniently applied, as it is highly consolidated and very precise (about +/- 1%), to other solid materials, preferably within the 0.85-20 mm size range. The standard amount of material to be tested is 100 g, but correct results can be obtained with smaller samples. The standard rotation rate is 60 +/- 5 rpm, but it has a small influence on the abrasion data, except for magnetic materials. The total number of revolutions is 1800. The percentage of fines formed after such revolutions, sieved below 0.85 mm, gives the measurement of the material's abrasion resistance.

The official text of the method can be found at www.astm.org

Catalyst pretreatment

The catalyst sample may require desiccation before testing.

Some practical examples are:

a) Fines formation during catalyst loading in the reactor.

The catalyst should not be dried.

b) Fines formation during reactor operation.

When the catalyst is activated in the reactor, the abrasion test has to be conducted on the activated sample.

When the catalyst is not activated, it should be dried at approximately reaction temperature.

Problems arising from low abrasion resistance of catalysts

a) Environmental problems during reactor loading.

b) Pressure drop increase in axial reactors.

c) Bypass formation in radial reactors.

d) Product contamination, in particular when solid.

Abrasion resistance specifications for some industrial catalysts

Abrasion resistance must be measured for any catalyst used in fixed-bed and trickle-bed reactors. For such catalysts, a maximum value of fines formed in the ASTM D4058-96 test is usually specified. Catalyst users should check this value for each batch of catalyst they purchase. The usual specifications of abrasion resistance for several industrial catalysts are reported hereunder.

PTA	1.5% max
Ammonia (prereduced)	2.0% max
Hydrotreating	2.0% max
Formaldehyde	3.0% max
Methanol	3.0% max
Styrene	3.0% max
LTS	5.0% max
HTS	8.0% max

CRUSH Series CRUSHING STRENGTH TESTERS

as per ASTM D4179 D 6175 D7084

Description/Overview The crush strength is the resistance of a solid to compression, a property of paramount importance not only for industrial catalysts, but also for ceramics, pharmaceutical tablets and many other solid materials. In the case of catalysts it is noteworthy that many plant shutdowns occur due to mechanical failure of the catalyst (and not due to its loss of activity).

CRUSH-BK, fully compliant with ASTM standards D4179 and D6175, is an instrument for measuring the crush strength of solid materials having regular, or almost regular, geometrical shape (like spheres, cylinders, rings and similar). Their size can vary in the range 1 - 20mm. CRUSH-BK is based on a dynamometer measuring the force progressively applied to the solid sample during the advancement of a piston. The force applied increases until the solid breaks and collapses into small pieces and, eventually, powder. The corresponding value of the collapsing force is defined as crush strength. When the material is composed of irregular particles, the measurement of the so-called 'single pellet' crush strength cannot be performed, but the 'bulk' crush strength must be determined instead.

CRUSH-BK allows to make both single pellet and bulk measurements with the same instrument and features a maximum load in the range 300-500Kg.

CRUSH-SP, applying much lower loads (30 kg max), is recommended when bulk measurements are not required and the pellets under examination are not very resistant. Both CRUSH-BK and CRUSH-SP feature a digital display, providing the crush strength in Newton, and an exit for a 30 mV recorder, where the shape of the crush peak can be observed.

The maximum load applicable of CRUSH-BK and CRUSH SP can vary according to customer's requirements (Our specialists can assist customers in the selection of the most suitable instrument).

CRUSH-BK/PC and **CRUSH-SP/PC** are the most advanced configurations of the Crush series instruments, equipped with a USB 2.0 PC connection and a data-treatment software.

Technical data

Power Supply		220V 50HZ 2 A
Weight		35 kg
Size (Width x Height x Depth)		310 x 650 x 460 mm
Color		white and black
Maximum load	CRUSH-BK	300 kg or 500 kgs
	CRUSH-SP	50 kgs
(different loads available on request)		
Piston advancement rate		10 mm/min
Speed of measurement		
single pellet		40-50 tests/hour
bulk (CRUSH-BK only)		10-15 tests/hour
Sample size range		1-20 mm
Reproducibility		
Single pellet (average of 50 pellets)		5%
Bulk (average of 5 measurements)		5%
Compliant with ASTM standards D4179 and D6175		
110V/60Hz version available on request		
Data interface		USB 2.0 PC connection for models (CRUSHBK/PC, CRUSH-SP/PC)
		30 mV recorder output for models (CRUSH-BK, CRUSH-SP)

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

CRUSH Series CRUSHING STRENGTH TEST

as per ASTM D4179 D 6175 D7084

Crush Piston cell

CRUSH SW software screen

Application note

CRUSH-BK and CRUSH-SP are dynamometers of general use for compression measurements. As far as catalysts are concerned, **the ASTM standard methods D4179 and D6175 are recommended**. D4179 refers to tableted pellets, which can be measured in either axial or radial way. As the axial crush strength is much higher, it is not representative of the catalyst behavior in the reactor, therefore the radial crush strength must be measured for industrial purposes (the type of crush strength measured must always be specified).

D6175-98 procedure refers to extrudates (the radial measurement can be only performed in this case). The radial crush strength is usually expressed in kg/mm or Newton/mm The official text of the two methods can be found at www.astm.org

A new ASTM method for bulk crush strength measurements (D7084-04) has become available in 2004. A standard faster simplified procedure developed is available to our customers.

Catalyst pretreatment The crush strength of a catalyst is not appreciably dependent on reactor loading, but mainly on reactor operation. When the catalyst does not require activation, the crush test should be conducted on fresh dried samples. When the catalyst has to be activated in the reactor, only measurements on activated samples are significant.

Problems arising from low crush strength of catalysts Pressure drop increase in axial reactors or Bypass formation in radial reactors.

Crush strength specifications for some industrial catalysts

Single-pellet radial or, for irregularly shaped particles, bulk crush strength must be measured for any catalyst used in fixed bed and trickle-bed reactors. A minimum value of the force required to break the pellets is usually specified for single-pellet crush strength (such value should not refer to axial measurements).

For bulk crush strength, either the minimum pressure giving 1% fines (ASTM D7804-04), or the maximum percentage of fines formed under the pressure of 23 bar (our procedure) are specified.

Examples of currently used crush strength specifications of some industrial catalysts:

Single-pellet radial		Bulk**	
Alumina spheres	7 kg min	Alumina spheres	10% max
LTS pellets*	5 kg min	Hydrotreating extrudates	5% max 15% max
HTS pellets*	10 kg min	Alumina extrudates	20% max
Methanol pellets*	8 kg min	Active carbon granules	1% max
Formaldehyde rings	2 kg min		
Hydrotreating extrudates	3 kg/mm min		
Styrene extrudates	2 kg/mm min		

For information please contact:

GECIL Process
14 Rte ST Romain
69450 ST Cyr au Mont d'or FRANCE
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Fax: +33(0)4 78472803
Email : Info@gecil.com

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Serving North & South America
http://www.gecil.com

ATTRI Series ATTRITION RESISTANCE of POWDERS

ATTRI-AS and ATTRI-ASMFC are compliant with CE specifications

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

as per ASTM D5757

Any powder, when moved, is subjected to the attrition phenomena, leading to the undesirable formation of fines. The measurement of attrition resistance is therefore indispensable, especially for powder catalysts in both fluid bed and slurry reactors.

ATTRI-AS is an instrument measuring the attrition resistance of any type of powder. It is based on the air jet principle and strictly follows ASTM standard method D5757. Nonetheless, it can also be used according to different procedures. Typical powders to be measured by this technique range between 10 and 180 micrometers in size.

Attri - Glass Tube ATTRI-AS is composed of a special stainless steel attrition tube, where the powder is stressed by high-speed air jets, coming from precision-drilled sub-millimeter nozzles. They provide an accelerated simulation of the attrition phenomenon occurring in reality during a period of months. Ahead of the attrition tube a glass-made settling chamber allows to look at the powder during the treatment. Both the air pressure and the flow rate measurement instruments are located before the attrition tube. Finally, an assembly for fines collection is located ahead of the settling chamber. The air flow can be humidified through a water saturator. The percent loss of fines after a specified time of treatment gives a measurement of the attrition resistance.

The new ATTRI-AS also comes in an advanced configuration (**ATTRI-AS/MFC**), featuring a mass flow controller (MFC), allowing an even more accurate measurement of the air flow.

Technical data

Power Supply 220V 50HZ 1A

Weight 50 kgs 110 Lbs

Size (W x H x D) 450 x 1900 x 500 mm 17.8 x 74.8 x 19.7 Inches

Color white

Timer with alarm included

Sample size range 10-180 micrometers

Compliant with ASTM standard D5757

Flow rate meter Rotameter (for model ATTRI-AS)

Mass flow controller (for model ATTRI-AS/MFC)

110V/60Hz version available on request

ATTRI Series ATTRITION RESISTANCE of POWDERS

Attri - Glass Tube

Attri - Attrition Tube Air Inlet

Attri - Mass Flow Controller

Attri - Manometer

as per ASTM D5757

Application note

The ASTM procedure The ASTM standard method D5757-00 has been primarily designed for catalysts, but can be effectively applied also to other powdered materials in the 10-180 micrometers size range. The standard amount of material to be tested is 50 grams and the standard air flow rate to be used is 600 l/h. The official text of the method can be found at www.astm.org

Alternative testing procedures can be supplied by our specialists.

Catalyst pretreatment

For FCC catalysts the standard method D5757 recommends pre treating at 565°C and subsequent addition of 10% water by weight. For other types of powder the pretreatment should be chosen case by case. our specialists will provide full assistance on the issue.

Problems arising from low attrition resistance of catalysts

- Excessive catalyst consumption in fluid bed reactors.
- Difficult catalyst filtration in slurry reactors.
- Loss of powder after pneumatic conveying (any type of powder).

Attrition resistance specifications

Due to the relatively recent introduction of this standard method, no widely agreed specifications for fluid bed or slurry catalysts are presently known. Suggestions can be given by our specialists.

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AUTOMATIC CENTRIFUGE for CRUDE & OIL TESTS

As per ASTM D91 ,D96, D1796, D2273,D2709, D2711, D4007

■**DESCRIPTION** The centrifuge **NCP Tech** main applications are the determination of water and sediment on mineral oils, as well as the characterization of lubricants by centrifugation. Fitting different adapters it allows to perform up to 10 different standards.

■**FEATURES** **Induction** motor maintenance free - Controlled by microprocessor - Noise level <60dB - Automatic rotor recognition, it shows on screen max. R.P.M., max. R.C.F. and max. capacity avoiding overspeed- Temperature regulation from ambient +5°C to +70°C - Open selectable : automatic at the end of the cycle or manual pressing keypad - Temperature selectable on °C/°F - RPM / RCF adjustable along run

■ **USER FRIENDLY** TFT touch screen - RPM regulation on steps of 100, RCF on 10 x g, time 1 to 99 and hold position - Up to 16 memories - Time starts at set RPM / RCF or from 0 RPM / RCF selectable - Buttons lid, start, stop and short cycles - Braking ramps 5 to 180 seconds - Motorized double lid lock - Pre-heating program with selectable temperature - Along the run shown a graphic visible from long distances, not required stay close to the unit -Rotor and adapters list on memory with max working values -

■ **SAFETY FEATURES** Hazard reduction system (optional) - Continuous checking and follow up device and accessories -Chamber of centrifugation in stainless steel, guard ring around - Temperature sensor inside the chamber - Lid dropping protection, and emergency overriding - Unbalance switch off - Rotor does not run until the lid is closed, and lid cannot be open until the rotor stops.- Safety system against overheating .

Automatic Centrifuge NCP TECH model

ORDERING INFORMATION

Cat # 29408 • Complete equipment without accessories

Supply: 230V – 50Hz or 115V – 60Hz

Dim.: 540 x 650 x 400 mm **Weight:** 55 Kg

NECESSARY ACCESSORIES

29405 Rotor 4 x 100mL, 3000 RPM max, 2113 RCF max, with 4 buckets

29407 Adapters for rotor 29405 for pear-shaped tubes

19438 Pear-shaped tube 100mL with 1,5mL graduated tip

19437 Pear-shaped tube 100mL with 3mL graduated tip

29406 Adapters for rotor 29405 for 6'' cone-shaped tubes

19321 6'' cone-shaped tube 100mL (167 mm)

29404 Rotor 4 x 100mL, 3000 RPM max, 2425 RCF max, with 4 buckets

19319 8'' cone-shaped tube 100mL (203 mm)

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

For information please contact:

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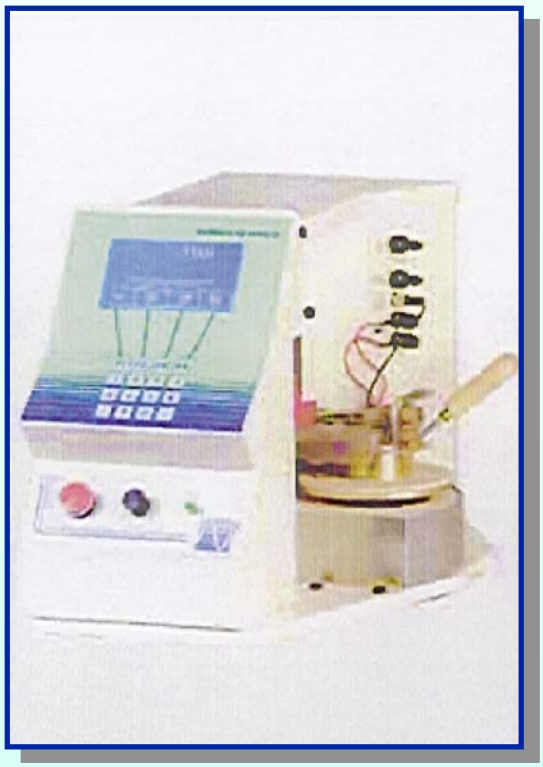
GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

AUTOMATIC FLASH POINT
CLEVELAND OPEN CUP – NCL 440



Automatic Cleveland Open Cup NCL 440

First instrument fully upgradeable to new standards via a PC

As per ASTM D92, ISO 2592, IP 36

- The NCL 440 flash point opened-cup is strictly in accordance with the above-mentioned standards. It is equipped with two ignitors: electric and gas. The gas flame is monitored by a thermocouple for improved safety.
- The NCL 440 is built with the state of the art technology and the large digital display allows test in progress to be viewed at distance.
- The flash point and the fire point are detected automatically using a flame ionization detector. A optional sample changer with 6 cups is available for unattended operation. A new sample may be inserted at any time during a test. A priority analysis function is provided to allow for an urgent test to start.
- The NCL 440 temperature range is from ambient to +400°C.
- The NCL 440 can be connected to a network via an RS232C output to send data. 100 results are stored in the instrument's memory.
- A comprehensive user friendly software allows the operator to access menu and enter parameters for calibration, maintenance and diagnostic via the keyboard.

ORDERING INFORMATION:

Cat # 40400	Automatic NCL 440 Cleveland Open Cup with Ticket Printer
OPTION	
Cat # 40440	6 Cups Auto-Sample-Changer

Outside measurement (mm)	**Weight (Kg)**
(W) 320 x (D) 580 x (H) 360	Approx. 17

Voltage and frequency 230 V –50/60 HZ
(115 V -60 HZ on request)

For information please contact:

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AUTOMATIC PENSKY FLASH POINT- NPM 440

Automatic Pensky Flash Point NPM 440

As per ASTM D93

■ Strictly in accordance with the above mentioned standard this unit benefits from the latest technology improvements. For instance, the testing process can be supervised at distance thanks to a large graphic display. The instrument can also be used with a portable C02 gas cartridge kit.

■ Aside the method required by the standard, a quick search method is available in order to find out the flash point of unknown samples. The dual detection system - thermal and ionization - allows to test all type of products.

■ The **NPM 440** is delivered with a flame tip detector as well as an automatic gas cut-off at the end of the test process

■ Changing the safety and operating parameters, calibrating through keyboard, modifying language and units, performing maintenance have become easy thanks to the new user-friendly software which also memorizes the previous test results

■ This instrument also provides :

- display of stirring speed,

- temperature curve follow up and print out,

- quick cool down between tests thanks to air ventilation or external water connection,

- an operating range between 0° and 400 °C.

■ Safety features of the instrument consist of a flame detector, an automatic gas cut-off in case of emergency and a connection to a CO2 gas cartridge..

ISO 9002 SGS EQCI

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

ORDERING INFORMATION:

Cat # 40300 Automatic Pensky Flash Point with Ticket Printer and Software

OPTION

• CO2 Cartridge Connection Kit

Outside measurement (mm)	**Weight (Kg)**
(W) 260 x (D)535 x (H) 500	Approx. 20

Power Supply 230 V 50 HZ Or 115 V -60 HZ

For information please contact:

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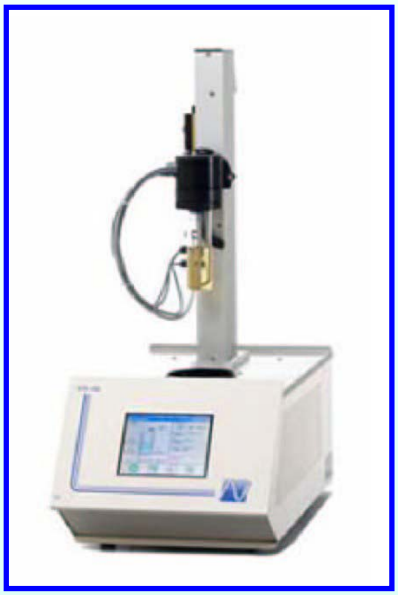
GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

FULLY AUTOMATIC CLOUD and POUR POINT NTE 450



Automatic Cloud and Pour Point NTE 450

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

Main Characteristics

- Mimics the standard methods
- Detection by specific optical fibre for Cloud Point
- Detection by ultra sonic sensor for Pour Point
- Visualisation of the different cooling steps – detection every 3°C or every 1°C
- Programmable cooling slope
- Quick set up of sample jar on measuring head
- Stand alone or multiple units networking
- Easy access to maintenance parameters by software
- Easy access to hardware maintenance
- Dimensions 27x50x60 cm Weight :Approx 25 kg

As per ASTM D97, D2500

The Pour point describes a procedure for testing the fluidity of a petroleum product at a specified temperature. The Cloud point is defined as the temperature of a liquid specimen when the smallest observable cluster of wax crystals first appears upon cooling under prescribed conditions.

Products Lubricating oils, distillate and residual oils, Biodiesels.

General Description Display of the detection level , Programmable bath temperature in stand by mode, Pt 100 sample temperature ,Jacket temperature, Display of the cooling set point levels ,Apparatus and sensors status ,Easy access to the service parameters ,Storage of the 200 last tests results ,Sample ID, Operator's name, Maintenance and calibration protected by password, Method files: 15 (5 standards and 10 custom built)

- **Pour Point** Detection by ultrasonic sensor ,Temperature range from -75°C to 51°C (Lowest temperature achieved upon external cryostat bath) ,Temperature measurement resolution : 1°C ,Tilting intervals : every 3°C or 1°C.

- **Cloud Point** Detection by optical fiber ,Test Intervals of 1°C, Temperature measurement resolution : 0,1°C, Temperature range from -75°C to 49°C (Lowest temperature achieved upon external cryostat bath.

- **Software** Computer interface through a user friendly software accessible by touch screen, Connexion of external PC by Ethernet cable,Storage of 200 results in stand alone mode, Stand alone or network multiple units configuration

ORDERING INFORMATION:

Cat Nbr 60300: NTE 450 CPP for determination of CLOUD AND POUR POINT is delivered complete with Printer, 1 cloud and 1 Pour point tube, instruction manual. CRYOSTAT to be ordered separately

Cat Nbr 60301: NTE 450 PP For determination of POUR POINT only 230V - 50 Hz

Cat Nbr 60302: NTE 450 CP For determination of CLOUD POINT only 230V - 50 Hz

for 115V / 60Hz add 115V to Cat Nbr

- **Option**

Cat Nbr 23205 Cryostat TLC 80 11 liters (-80°c / +20°C)

For information please contact:

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GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

ASTM D 5 - D 217 - D 937 - D 1321 & D 1403 - IP 49 - IP 50 - IP 179 & IP 310 - DIN 51579 - DIN 51580 & DIN 52010 - ISO EN 1426 - ISO 2137 - ISO 3992 & ISO 6298

SCOPE

This test method covers determination of the penetration of semi-solid and solid bituminous materials.

APPLICATIONS

Semi-solid and solid bituminous materials

"NEW" FULLY AUTOMATIC MODEL OF PENETRATION VALUE DETERMINATION
NPN TECH - REF. 942734 -

MAIN FEATURES

- Built-in user friendly software
- Full automatic approach on conductive products & hard bitumen
- Four programmable reference positions for the cone holder assembly
- Stepper motor for penetration depth as low as 0.01 mm
- Programmable Penetration time between 0 and 999 min
- Temperature measurement : -10 to 150°C
- Range : 0 to 75 mm
- Results : in 1/10 mm on full range
- Displayed resolution : in 1/100 mm
- Position recall for routine tests can be set
- Optoelectronic detection of depth penetration
- Optional automatic level detection device for bitumen
- Three last tests displayed with calculated average
- Language : English or French
- Connection : 2 USB ports - 1 for printer or keyboard and 1 for PC
- Anodized base plate with sample centring device
- Adjustable led lamp & magnifying glass
- Main keyboard with protective polyester sheet cover

REF. 942734 - NPN TECH

SCOPE OF DELIVERY

NPN TECH delivered with magnifying lens, low voltage illuminator, centring guide, screw & nut and power cord.
For use on AC 230 V, 50/60Hz - 1 A

DIMENSIONS

(W) 720 x (D) 250 x (H) 330 mm (±16kg)

ADITIONAL ACCESSORIES AND OPTIONS

REF. 27674	Transfer bath, made of glass - to be connected to a water bath
REF. 27673	Transfer bath support with holes dia. 165 x 35 mm for 5 containers
REF. 27794	Constant temperature water bath (range : -30 to +150°C) - Model RE 112 -
REF. 941732	Calibration kit for automatic penetrometer
REF. 9417371	Bitumen automatic level detection device
REF. 11504	ASTM 17C thermometer, range from +19 to +27°C
REF. 11532	ASTM 63C thermometer, range from -8 to +32°C
REF. 11533	ASTM 64C thermometer, range from +25 to +65°C

GREASE MODE

Set of accessories for auto level detection of conductive sample comprising :
REF. 92-035890 Probe cable (dia.2mm / 50 cm length)
REF. 92-033490 Mini grip
REF. 92-033510 Test probe

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ACCESSORIES AND CONSUMABLES for Bitumen (ASTM D5)

REF. 518063 Standard needle 2.5 g (up to 350 units)
REF. 941737 Needle holder 47.5 g (1 supplier with main equipment)
REF. 941810 Outfit for penetration of bituminous material including : needle, holder, 50 g weight and 2 containers
REF. 941812 Additional weight 100 g
REF. 941815 Additional weight 50 g
REF. 9418140 Long needle 2.5 g (up to 500 units)
REF. 21712 Pack of 300 Sample containers only one use, 55x35 mm
REF. 518066 Aluminium container, 55 X 35 mm
REF. 9418181 Aluminium container, 55x70 mm (>200 units)
REF. 9418191 Aluminium container, 55x57 mm (up to 500 units)

REF. 941810

ACCESSORIES (for lubricating greases - ASTM D 217)

REF. 941739 Grease cutter with blade (210x140x170 mm) ±2 kg
REF. 941736 Outfit for consistency of lubricating grease including : cone, holder & container
REF. 941737 Cone holder, nickel-plated brass, movable, 47.5 g
REF. 941738 Standard cone 102.5 g
REF. 9417411 Sample container, 76x63 mm
REF. 27322 Spatula 30x200 mm

REF. 941739

ACCESSORIES (for consistency of petroleum - ASTM D 937)

REF. 941735 Outfit for consistency of petroleum including : cone, container & holder
REF. 941737 Cone holder, nickel-plated brass, movable, 47.5 g
REF. 941738 Standard cone 102.5 g
REF. 9417412 Sample container 100 x 65 mm with cover

REF. 941736

ACCESSORIES (for consistency of petroleum waxes - ASTM D 1321)

REF. 941737 Cone holder, nickel-plated brass, movable, 47.5 g
REF. 941811 Outfit for consistency of petroleum waxe including : shouldered needle, container, weight & holder
REF. 941815 Additional weight 50 g
REF. 941816 Needle with shoulder 2.5 g, stainless steel
REF. 941820 Sample container with base plate
REF. 40-881605 Needle 2,5g with certificate

REF. 941735

ACCESSORIES (Penetration tests using one-quarter or one-half scale cone equipment - ASTM D 1403)

REF. 941742 1/4 scale cone (9.38 g)
REF. 941743 1/2 scale cone (37.5 g)
REF. 27322 Spatula 30 x 200 mm

REF. 941811

SPARE PARTS

REF. 9417341 Light bulb for REF. 942734
REF. 9417342 Flexible light for REF.942734
REF. 9417343 Magnifying glass for REF. 942734

ALTERNATIVE

PENETROMETER - MANUAL MODEL

MANUAL penetrometer including a large table on levelling feet with spirit level, manual release mechanism and dial indicator in µ0.01 mm. Outfit comprising needle, holder, sample containers & 50 g weight to be ordered separately.
This manual version is compatible with accessories listed above.

DIMENSIONS

(W) 180 x (D) 180 x (H) 560 mm (±6kg)

REF. 941731

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EXISTENT GUM IN FUELS
BY JET EVAPORATION – P303

As per ASTM D381, IP 131, ISO 6246

The model P303 features:

Exclusive triple digital controllers

- for air temperature (155 ± 0,5°C)
- for steam temperature (232 ± 2°C)
- for both air and steam flows (1000 ml/sec ± 15%).

The two temperature controllers are connected to the Pt 100 sensor.

Alternative model P302:

Same as above apparatus but for air jet test only, without superheater

Five evaporation test sites recessed in aluminum block

Aluminum block bath is uniformally heated by several electrical heating elements

Model P303 has steam superheater built into the base

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

ORDERING INFORMATION:

Cat # P303	**Existent gum bath** in fuels by steam-jet and air-jet evaporation
Cat # P302	**Existent gum bath** in fuels by air-jet evaporation only
OPTIONS	
Cat # P308	**Steam generator 40 lbs** per hour, 2KW, triphase supply only 230/380/416/440V. Supplied with factory adjusted constant level device for continuous stable steam distribution during testing and heat resistant flexible tubing for connecting to P303.
Cat # P3081	**Air compressor** 150/230/240 V single phase supply, to deliver suitable air quantity to the five outlets when performing air jet tests, complete with flexible tubing for connection to P302 and P303. Reservoir capacity: 250L

Outside measurement (mm)	**Weight (Kg)**
P303 (W) 770 x (D) 380 x (H) 570	Approx. 60
P302 (W) 770 x (D) 380 x (H) 570	Approx. 45
P308 (W) 750 x (D) 530 x (H) 920 approx	.Approx. 75
P3081 (W) 1200 x (D) 700 x (H) 1050 approx	.Approx. 65

P303/302 Voltage and frequency 230 V - 50 HZ

For information please contact:

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SCOPE
This test method covers the determination of kinematic viscosity of transparent and opaque liquid such as fresh and used engine oils using and automated Houillon viscometer. In accordance with ASTM Method D7279

APPLICATIONS
Fresh and used oils, Research and development labs, Lubricating oil blending, metal industry.

AUTOMATIC HOUILLON VISCOMETER - MODEL NVH 450

MAIN CHARACTERISTICS

- 4 simultaneous tests .Viscosity range : 0,2 to 5000 cSt
- Bath working temperature range: from ambient up to 120°C Bath temperature accuracy: 0.015°C
- Accuracy of flow measurement: 0.0 1S.
- Solvent tanks included (1 or 2 solvents)
- Automatic tube cleaning one by one
- Easy calibration (12 tubes can be stored) by reference fluid . Possibility to calculate the VI from 2 different tests or between 2 connected
- Easy tube replacement and adjustment
- Electro Valve resisting to hard solvent in standard
- All parameters accessible by touch screen .Unique cleaning system .2 calibration procedure steps
- QUICK: 50 to 200 seconds per run
- LOW COST ANALYSIS
  - Small volume samples between 100µL and 400µL injected by micro pipette
  - Small solvent consumption to clean the tubes (between 5 and 10mL).

SCOPE OF DELIVERY

NVH 450 – reference 60100 -cleaning system and pump included. S*ilicone oil, tubes and pipettes to be ordered separately*

Stand alone or network multiple units via ETHERNET connection WINDOWS® Platform

Bath features
Capacity : 11 liters
Medium type : silicon oil 200-10 or water Temperature range : 40 to 120°C Stability : ± 0.02°C
Bath refrigeration : by built-in cooling coil Nature of coolant : WATER or external chiller Temperature rising time from ambient to 120°C : 1h30 Temperature lowering time from 120°C to ambient with coolant : ± 2 h

Electrical features
Frequency : 50/60 Hz
Power supply : 115/230 V
Power consumption : 2 kW

Dimensions
Length : 540 mm
Depth : 340 mm
Height: 762 mm
Weight : ±75 kg

CLEAR AND DARK PRODUCTS WITH THE SAME TUBES

Série	Approximative Tube Constant	Viscosity in cSt	
		Mini	Maxi
50	0.016	0.8	3.2
75	0.032	1.6	6.4
100	0.06	3	12
150	0.14	7	28
200	0.4	20	80
300	1	50	200
350	2	100	400
400	4.8	240	960
450	10	500	2000

HOUILLON VISCOMETER TUBES TABLE

ASTM D 445 - ISO 3104 - IP 71 - DIN 51366

SCOPE

This test method specifies a procedure for the determination of the kinematic viscosity of liquid petroleum products, both transparent and opaque, by measuring the time for a volume of liquid to flow under gravity through a calibrated glass capillary viscometer.

TV 2000 VISCOMETER BATH

MAIN CHARACTERISTICS

Bath can be operated from ambient +5 up to +230 °C (41..446 °F). With the use of the built-in cooling coil, span lies 5°K above the temperature of the cooling liquid. Bath volume 20 liters. The TV 2000 offers two rows of 3 and 2 lids. These openings of 50 mm dia. will accommodate glass capillary in holders.

Range	..230°C/..482°F
Reading	Standard °C, °F on request
Used materials inside bath	Stainless Steel 304, PTFE
Setting ±	0.1°C
Offset	0.01°C
Stability* ±	0.01°K
Heating	2800 W
Heaters	3
Bath volume	20 L
Number of lids	3 L
Window	140 * 285 mm
Opening lid	51(dia) mm
Opening bath	130*165 mm

SCOPE OF DELIVERY

TV 2000 – Ref.23202

For use on AC 230 V, 50/60Hz – 12A-
Dimensions (wxdxh) 465x300x585 mm
Weight : ±40 kg

TV 4000 VISCOMETER BATH

MAIN CHARACTERISTICS

Bath can be operated fro m ambient +5 up to +230 °C (41..446 °F). With the use of the built-in cooling coil, span lies 5°K above the temperature of the cooling liquid. Bath volume 40 liters. In the stainless steel bath cover 7 openings with lids. These openings of 50 mm dia. will accommodate glass capillary in holders.

Range	..230°C/..482°F
Reading	Standard °C, °F on request
Used materials inside bath	Stainless Steel 304, PTFE
Setting ±	0.1°C
Offset	0.01°C
Stability* ±	0.01°K
Heating	2800 W
Heaters	3
Bath volume	40 L
Number of lids	4 + 3 or 4 + 4 L
Window	270 * 285 mm
Opening lid	51(dia) mm
Opening bath	260 * 240 mm

SCOPE OF DELIVERY

TV 4000 – Ref.23200

For use on AC 230 V, 50/60Hz – 12A-
(wxdxh) 590x300x585 mm W : 41 Kgs.

GT instruments PO Box 846 KEMAH TX 77565 USA
Phone : +1 281 334 5015 Fax +1 281 538 3622 email : info@gtinstruments.com

RAMSBOTTOM
CARBON RESIDUE APPARATUS
Model RCD 98000

As per ASTM D524, IP 14, ISO 4262

RAMSBOTTOM
metal furnace
Model RCR 98000

Metal coking furnace of solid metal constructed of a cast iron block, accurately machined to accommodate 5 borosilicate glass bulbs, encased in a heavily insulated shell and electrically heated, 115V volt 60 Hz to a uniform temperature of 550°C (1020°F). The instrument is provided with a control bulb made entirely of stainless steel containing a thermocouple and compensating lead for connection to electronic controller with temperature digital display and setting, with reverse-switch for temperature checking of the coking bulbs and the control bulb.

ACCESSORIES

LAB-100-994 Coking bulb filling device. ASTM D 524 - Apparatus consists of a metal stand to support the Pyrex coking bulbs and syringes used to fill in the coking bulbs. All parts are in perfect alignment for filing. Five-unit, complete but without syringes or coking bulbs

LAB-100-985 Control bulb assembly, stainless steel, complete with iron-constantan thermocouple, for use in determining compliance of furnace characteristics with the performance requirements.

LAB-100-982 Syringe 10 ml capacity, with needle to fill up the bulbs.

LAB-100-981 — Coking bulbs ramsbottom, borosilicate glass: with capillary neck, 1,5 to 2 mm inside diameter set of 10

ORDERING INFORMATION:
LT-RCR-98000-M Ramsbottom carbon residue apparatus, complete with automatic electronic indicating controller with iron constant thermocouple, compensating lead, range 50 to 600°C, within the limits specified by ASTM D524, but without accessories

Voltage and frequency 115 V - 60 HZ

This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

For information please contact:

GT Instruments
P.O. Box 846 - Kemah, TX 77565-0846
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GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

AUTOMATIC POTENTIAL GUMS & INDUCTION PERIOD TESTER

GEC-OX model NPI 442

(4 place metal bath in picture)

- **SAFE**
- **ACCURATE**
- **COMPACT**
- **VERSATILE**

LIQUID and DRY OXIDATION BATHS

✓**INDUCTION PERIOD and POTENTIAL RESIDUE**
per ASTM D525, D873, D942, D5304 , ISO 7536, IP 40, IP 138, IP 142, NFM 07013

This instrument is dedicated to the testing of gasoline, aviation fuels, gas or grease stability in oxidizing environments.

◆ The bath temperature must be set for 100 °C and maintained between 98 °C and 102 °C. At test end, a powerful software computes the induction period.

◆ The pressure probes located on top of the test cylinders provide accurate measurements during the test process and are sealed to prevent from leakage.

◆ The automatic detection is provided by a sophisticated software associated to electronic high resolution probes. This user friendly software allows to operate each test place individually, to set maintenance functions and to assess safety device parameters dedicated to overheating prevention.

◆• Test results, time/pressure curve as well as pressure derivative curve can be graphically or numerically printed.

◆• Type of test to be carried for each pressure cylinder must be specified. Each StSt pressure cylinder assembly is delivered with a glassware set and an adjusted burst disk to prevent overpressure .

ORDERING INFORMATION:

Cat #40900 • 2 Unit automatic instrument with liquid bath.

Cat #40925 • 4 Unit automatic instrument with metallic bath.

Cat #40903 • Testing pressure stainless steel cylinder with cover, glassware and pressure rupture disk

OPTION

Cat #40930 • Oxygen filling and decompression valve adapter

Outside measurement (mm)	Weight (Kg)
(W) 560 x (D) 560 x (H) 550	60

Voltage and frequency 230 V - 50 HZ (115 V - 60 HZ on request)

This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

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GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

FOAMING CHARACTERISTICS OF LUBRICATING OILS – P643

As per ASTM D892 and D6082

IP 146, ISO 6247

The models P643 features:

- The instrument performs two tests at 24°C and two tests at 93.5°C . Also can run Sequence 4 at 150 C .
- The equipment comes complete with 2 heat resistant glass jars.Each jar has its own control module including an electronic temperature controller with digital display and control knob, two factory calibrated flow meters, two 1000ml test cylinders, two certified diffuser stones, immersion heater with over-temperature protection, efficient stirring system with adjustable speed, air delivery tubing and thermometer.
- Cold bath with built-in coils for air and cooling water or refrigerant circulations.

Dual twin tester, small foot print for easy installation in a standard fume hood

ORDERING INFORMATION:

Cat # 9416431	Automatic time sequencer for monitoring soaking, blowing and settling periods for four samples.
Cat # 941640	Single Test bath for both 24 C and 93.5 C. Delivered complete with certified stone , glassware, flow meters and thermometers
Cat # 941643	Twin Test baths for both 24 C and 93.5 C. Delivered complete with certified stone , glassware, flow meters and thermometers
Cat # 9416432	Twin Test baths for sequence 1,2,3 at 24 and 93.5 C and sequence 4 at 150°C . Delivered complete with two test cylinders , calibrated flow meters and diffuser stones and with same upper controller than model 941643.

Outside measurement (mm)	**Weight (Kg)**
643 (W) 680 x (D) 340 x (H) 770	Approx. 36
6431 (W) 380 x (D) 380 x (H) 780	Approx. 45

Voltage and frequency 230 V - 50 HZ
(115 V -60 HZ on request)

This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

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GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

OXIDATION CHARACTERISTICS (TOST) – P623

As per ASTM D943, D2274, D2893

IP 157, DIN 5187

The model P623 features:

- Exclusive turntable bringing each sample tube in front of operator for easy checking without disturbance of the other tubes and without being forced to remove it from the bath.
- Air or oxygen supply to each cell is measured and adjusted by easy readable set of eight accurate individual flow meters.
- Flow meter choice is flexible: from one to eight for air or oxygen with every combination of both or, an optional second easy exchangeable supporting panel with eight flow meters of the other type. A set of eight large scales, accurate flow meters are to order separately with instrument. Please precise quantities and types.
- Interior of the bath may be illuminated and the front viewing window is covered with removable magnetic metallic opaque panel for short runs in total darkness.

The instrument consists of an 8-position constant temperature bath with an electronic controller and digital display.

Temperature range is between 50 and 130°C controlled to a uniform ± 0.1°C by an adjustable external stirring mechanism .

ORDERING INFORMATION:

Cat # P623	Basic unit without flow-meters
	Flow-meters quantities and type to be specified and ordered separately.

ACCESSORIES:

6241	Complete set of 8 glassware assemblies
6242	Additional accessories including copper and iron catalysts, winding mandrel and thermometer bracket
6243	Kit ASTM D943 including 8 syringes, 8 needles and syringe supports

Outside measurement (mm)	**Weight (Kg)**
(W) 610 x (D) 450 x (H) 1100	Approx. 40

Voltage and frequency 230 V - 50 HZ
(115 V-60 HZ on request)

ISO 9002 SGS EQCI

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

For information please contact:

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GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

WATER SEPARABILITY OF PETROLEUM OILS AND SYNTHETIC FLUIDS

as per ASTM D1401 - ISO 6614

Model P545

- Three-test tube positions model.
- Electronic temperature controller between ambient and 95°C to 0,1°C with digital display and setting.
- Electronic stirring speed controller between 1200 and 1800rpm by 1 rpm step.
- Inside illumination.
- Easy movable stirring head with paddle for rapid and correct positioning in each of the three sample tubes.
- 20-Way keyboard with interactive software and audible alarm every 5 minutes to call operator for layers recording as per standard.
- Auto-memorization of the various parameters recorded in non volatile memory.
- Electrical safety : 300 mA circuit breaker.
- Overtemperature protection by separate thermostate adjusted in factory and coupled to circuit breaker.
- Removable paddle for easy cleaning.
- Water bath capacity : 30 liters.

Demulsibility microprocessor controlled tester with highest reproducibility and repeatability.

REGISTERED QUALITY SYSTEM ISO 9002 SGS EQC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

ORDERING INFORMATION:

Cat # 941545 • Demulsibility bath

Outside measurement (mm)	**Weight (Kg)**
(W) 530 x (D) 380 x (H) 900	43

Voltage and frequency

230 V, 50 / 60 Hz, 2200 W.

For information please contact:

GT Instruments

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GT INSTRUMENTS

PROCESS AND LAB INSTRUMENTATION

AUTOMATIC FBT DETERMINATION - NBF 210

Filter Blocking Tendency of distillate fuel oils

This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

ORDERING INFORMATION:

Portable Model	Cat # 41800
Bench Top Model	Cat # 41801
Measurement (mm)	**Weight (Kg)**
(W) 260 x (D) 535 x (H) 500	Approx.. 20

Voltage and frequency 230 V - 50 HZ
(115 V - 60 HZ on request)

For information please contact:

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As per ASTM D2068, IP387

■ The **NBF 210** automatically determines Filter Blocking Tendency (FBT) of distillate fuel oils where the end use demands an exceptional degree of cleanliness.The **NBF 210** automatically determines FBT by integrating filtered flow and pressure during the test. The pressure/flow curve is automatically printed at the end of the test as well as the calculation method and results.

■ The instrument consist of the following elements:
- a pump system which maintains a constant flow,
- a pressure sensor set behind the filter,
- two 400ml beakers,
- an automatic follow up system of the filtered volume during the test.

■ The temperature, pressure, time and eventually FBT are displayed on a LCD screen.

■ Two models are available, portable or bench top. Both delivered with an 80 column printer and ready for use.

GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

OXIDATION STABILITY TEST – P650

The P650 Oxidation Stability Tester features an all aluminum bath block that can accommodate twelve sample tubes and corresponding flow meters

As per ASTM D2440

IP 48, IP 280, IP 306, IP 307, IP 335

DIN 51352

The model P650 features:

- Electronic controller with Platinum 100 sensor and digital temperature display between 50°C and 210°C to ± 0.1°C.
- Flow meter choice is flexible: from one to twelve for air or oxygen with every combination of both or, an optional second easy exchangeable supporting panel with twelve flow meters of the other type. A set of twelve large scale, accurate flow meters are to be ordered separately. Please precise quantities and types.
- The block bath also includes a thirteenth recess for occasional temperature check as per standards requirements and aluminum alloy temperature measuring block for thermometer.
- A choice of glassware and catalyst metals are available to complete the test equipment and are offered separately.

ORDERING INFORMATION:

Cat # P650	Basic equipment without flow meters
	Flow meters and accessories to be ordered separately (refer to quotation)

Outside measurement (mm)	**Weight (Kg)**
(W) 650 x (D) 620 x (H) 850	Approx. 55

Voltage and frequency 230 V - 50 HZ
(115 V -60 HZ on request)

REGISTERED QUALITY SYSTEM ISO 9002 SGS EQC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

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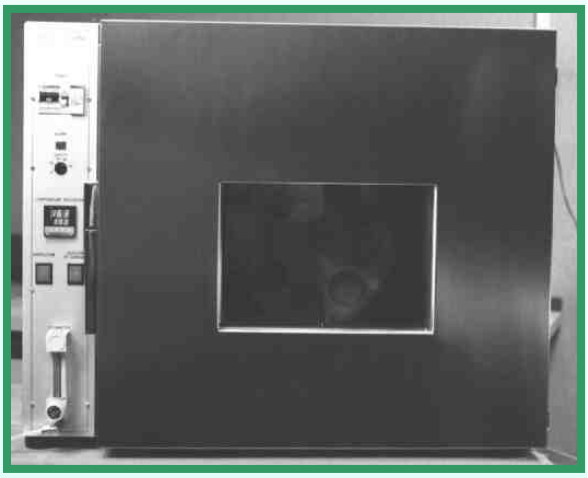
GT INSTRUMENTS
PROCESS AND LAB INSTRUMENTATION

EFFECT OF HEAT & AIR ON A MOVING FILM OF ASPHALT – model 7572



Constructed strictly in accordance with the ASTM specifications

As per ASTM D2872

(Rolling thin film oven test-RTFOT)

The model 7572 features:

- Double wall convection oven with 90 Liters capacity.
- The door has a viewing window made of two sheets of heat resistant glass separated by an air layer.
- The oven is vented at the top and bottom. Bottom symmetric vents have 15cm^2 opening area and top vents have 9.5cm2 Opening area.
- This oven has an air plenum as described in ASTM D2872 specification. It is also provided with squirrel type fan for better heat uniformity.
- The control panel includes electronic temperature regulator with digital display and can be set from 155 to 170°C ± 0.5°C and a factory calibrated flow meter for adjusting airflow at 4000 ml/mm. (50-600 Nl / h)
- The oven has a built in 305 mm diameter vertical carousel to hold 8 glass sample containers rotating at 15 ± 0.2 rpm.
- It is equipped with an air jet for blowing heated air into each bottle at its lowest point of travel.
- Outlet orifice has a 1 mm diameter and is connected to a 7.6 m length copper tubing to heat up air. The apparatus is supplied with 8 glass containers and one thermometer ASTM 13C.
- The instrument has an over-heat protection.

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

Outside measurement (mm)	Weight (Kg)
(W) 840 x (D) 620 x (H) 850	Approx. 70

For information please contact:

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GT INSTRUMENTS
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SALT-IN-CRUDE ANALYZER – NSB 210

As per ASTM D3230

The Salt-in-Crude Analyzer fully complies with the ASTM method and specifications for construction and the 25000 ohms (±0.5%) non-inductive resistor for calibration.

The model NSB 210 features:

- Digital readout of both current and voltage for easy checking.
- Continuous adjustment of test voltage between 0 and 300 VAC.
- Very easy to operate through a single selection switch for calibration, standby and measurement.

ORDERING INFORMATION:

Cat # 942287 Salt-in-Crude analyzer with electrodes

Outside measurement (mm)	**Weight (Kg)**
(W) 300 x (D) 350 x (H) 150	Approx. 8

Voltage and frequency 230 V - 50 HZ
(115 V -60 HZ on request)

REGISTERED QUALITY SYSTEM ISO 9002 SGS EQC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

For information please contact:

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AIR RELEASE VALUE – P688

As per ASTM D3427, IP 313, DIN1381

The model P688 features:

- The test unit with one set of glass-ware,
- A thermostated circulation bath for the jacketed test vessel,
- An oven (not illustrated) for pre-heating,
- Necessary tubing, glass plunger with platinum wire for density measurement.

The tester is equipped with an electronic temperature controller and digital display and control knob, one pressure gauge, one valve for heated air delivery, a plate for installing the density balance (to be ordered separately), two moving attachments for installing up to two glass vessels (one for bubbling while the density is being recorded in the other), the air preheating vessel is installed behind the front panel, one thermometer ASTM 12C and one stop watch.

The Air Release Tester is designed to accommodate two samples

ORDERING INFORMATION:

Cat # P688	Air release test rig
Cat # 213	Analytical balance, 110g (to 0.1mg) capacity with special attachment for plunger, RS232 interface

OPTIONS:

6881	Printer for density recording
6882	Dedicated PC software

Outside measurement (mm)	**Weight (Kg)**
(W) 590 x (D) 340 x (H) 590	Approx. 105

Voltage and frequency 230 V - 50 HZ
(115 V -60 HZ on request)

This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

For information please contact:

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GT INSTRUMENTS
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AUTOMATIC MICRO CONRADSON
CARBON RESIDUE DETERMINATION – MICRO CONRADSON

NMC 210 Model

as per ASTM D4530

■ This test method covers the determination of the amount of carbon residue formed after evaporation and pyrolysis of petroleum materials under certain conditions and is intended to provide some indication of the relative coke forming tendency of such materials.

New micro carbon residue tester - model NMC 210 includes following features :

■Ambient temperature use : 15 to 30°C

■Ambient relative humidity : max. 85% (non condensing)

■Furnace temperature range : from ambient to 550°C

■Temperature measurement resolution : 1°C

■Furnace cooling : by compressed air injection

■Maximum load of samples : 12 small vials

■The double insulated oven is ventilated with an inert gas or air and can perform the micro conradson test at 500°C

■ A pressure gauge located on instrument front panel displays the gas delivery pressure to oven and a flowmeter indicates the amount of gas entering the oven area..

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

ORDERING INFORMATION:
NMC 210 • Micro conradson tester.
Cat Nb 941670

Outside measurement (mm)	**Weight (Kg)**
(W)250x(D)300x(H)600	± 15

Voltage and frequency 230 V - 50 HZ
(115 V- 60HZ on request)

For information please contact:

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GT INSTRUMENTS
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AUTOMATIC ASH TESTER
MICRO CARBON RESIDUE – MICRO CONRADSON

NMC 440 Model

Custom built Ash methods and also as per ASTM D4530, D482, D189 EN 7, 13, IP 398, ISO 10370, 6615, 6245,

- The NMC 440 provides 2 preset methods and also 18 additional research ones with 4 heating segments each.
- The double insulated oven is ventilated with an inert gas or air and can perform the micro conradson test at 500°C or the ash test at 775°C.
- A pressure gauge located on instrument front panel displays the gas delivery pressure to oven and a flowmeter indicates the amount of gas entering the oven area. Solenoid valves can be either manually or automatically activated.
- Initial and final weights are entered by using the keypad so that carbon residue percentage of each sample can be computed and included on test reports.
- A detailed test report including weights, results and temperature curve during the test can be printed when the NMC 440 is connected to the optional thermal printer. The instrument can also be connected to a PC which not only keeps track of previous test results but also displays during tests the temperature curve. A zoom on the critical part of it can be easily performed.
- The instrument is equipped with preset and programmable cuts-off for safety. The heating element is especially protected against overheating.

ORDERING INFORMATION:

NMC 440 • Micro carbon residue & ash tester.

OPTION

- Vials and crucibles for samples
- Printer
- Gas connection kit

Outside measurement (mm)	**Weight (Kg)**
(W)285x(D)510x(H)450	± 18

Voltage and frequency 230 V - 50 HZ

(115 V- 60HZ on request)

This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

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COLD BEHAVIOR

FULLY AUTOMATED COLD FILTER PLUGGING POINT

- Model NTL 450 -

Standards : ASTM D 6371 – IP 309 – ISO EN 116 –

Applications : Diesels and heating fuels

Scope : This test method covers the determination of the cold filter plugging point (CFPP) of diesel and domestic heating fuels using automated equipment.
The results express an estimation of the lowest temperature at which a fuel will freely flow within a fuel system

Reference 60200

TOUCHSCREEN interface
Storage : 200 results in stand alone or network multiple units through ETHERNET connexion (unlimited storage !!)
WINDOWS Platform

MAIN FEATURES

- ✓ **Detection by special optical cells**
- ✓ **Real time Display of the method cooling steps and curves**
- ✓ **Possibility to use a programmed linear cooling slope**
- ✓ **Quick and easy set up on testing head**
- ✓ **Stand alone or networking configuration**
- ✓ **Display of sucking up time & release time of the sample**
- ✓ **Easy access to maintenance paramaters by software**
- ✓ **Easy access to hardware maintenance**
- ✓ **Electronic vacuum regulation with 15 l/h**

- EXTERNAL COOLING CRYOSTAT REQUIRED CONTACT US

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P.O BOX 846 KEMAH TX 77565-0846 USA
TEL. 1 281 334 5015 FAX 1 281 538 3622
Email : info@gtinstruments.com
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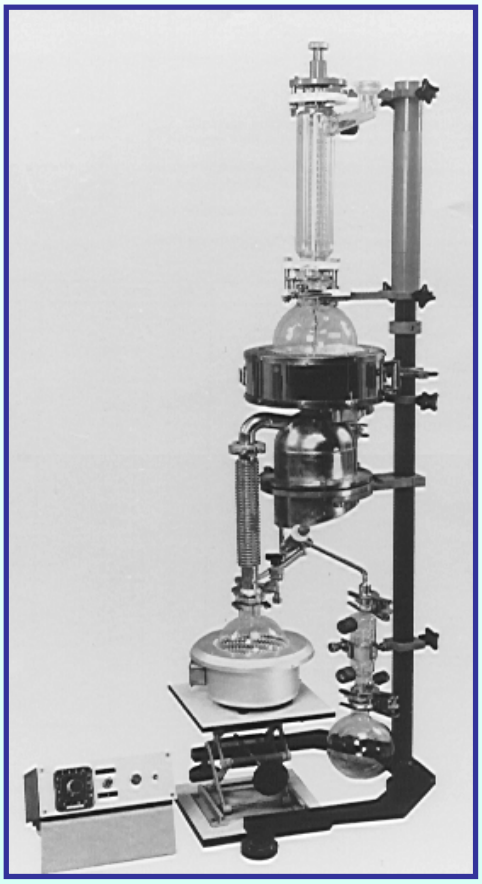
ASPHALTENES DETERMINATION in CRUDE and PETROLEUM PRODUCTS



As per ASTM D6560, IP143

The ASPHAN 02 features:

The semi automatic ASPHAN 02 apparatus offers several benefits to the chemist and operator :

a compact design easy to operate , it can be install in a fume hood.

an increase in repeatability and reproducibility ,

an increase in the yields of the standard method ,

a decrease in solvent consumption as solvents can be recovered ,

an increase in safety level as the filtration step of the method is automatic without operator intervention or contact with solvents .

The titration of asphaltenes content of petroleum products in accordance with ASTM D6560 is generally determined by precipitation with n-heptane.Determinations below 0.5% are very difficult or impossible and repeatability or reproducibilty for concentration above 0.5% are very poor.

The ASPHAN 02 designed by ELF Research comply and exceed the characteristics of the methods D6560 , IP143 in respect to :

-Repeatability around 5% concentration is less than 2% Wt of the result.

- Low range of determination level down to 0.2 / 0.3 % Wt

■Test performed with fewer operator interventions

■ Apparatus completely sealed (no toxic exhaust)

■ Low concentration determinations

■ Test performed quickly and accurately

REGISTERED QUALITY SYSTEM ISO 9002 SGS EQC

CE This instrument complies with the European Directives regarding operator and environment safeties and is therefore bearing the CE label.

ORDERING INFORMATION:

Cat # 3ASPH02 Asphan 02 asphaltenes extractor complete

For information please contact:

GECIL Process
14 Rte ST Romain -69450 ST Cyr au Mont d'or FRANCE
Phone: +33 (0)4 72532393 Fax: +33(0)4 78472803
Email : Info@gecil.com
GT Instruments
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GECIL PROCESS
PROCESS AND LAB INSTRUMENTATION

GECIL Process

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